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June 5, 1996

Mr. Richard Powell
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Naval Facilities Engineering Command
900 Commodore Drive, Building 208
San Bruno, CA 94066-2402

Subject: **Technical Memorandum, Review of PCB Occurrences in Soil and Groundwater, Hunters Point Shipyard, San Francisco, California**
CLEAN Contract No. N62474-88-D-5086 (CLEAN I), CTO No. 0142

Dear Mr. Powell:

Enclosed please find 15 copies of the Technical Memorandum, Review of PCB Occurrences in Soil and Groundwater, Hunters Point Shipyard, dated May 31, 1996, for your distribution.

PCB occurrences in soil and groundwater have been evaluated regarding adequacy of characterization for risk assessment and feasibility study purposes. At a majority of the sample locations the characterization was considered adequate. Areas with possible needs of further characterizations occur in soils in Parcel D and in Parcel E and in the groundwater in Parcel C and Parcel E.

Those areas with possible need for further characterization mentioned within this report have been integrated into the ongoing sampling activities of the remedial investigations (RI). This current sampling will be reported in the parcel-wide RI reports. Additional sampling conducted within these areas should provide the information necessary to adequately characterize the sites for risk assessment and feasibility studies considering remedial actions. Those areas with particular emphasis on the integration of recommended work and ongoing sampling are as follows:

- Soil: Parcel D site IR-36
  Parcel E sites IR-1, IR-2, IR-3, IR-4, IR-5, IR-13, and IR-14
- Groundwater: Parcel C sites IR-28, IR-29 and IR-50
  Parcel E site IR-05

The actual proposed action at these and any other sites will be covered by the remedial actions since schedule and funding does not permit the use of interim removal actions as proposed in this report. At the

time of the cleanup the use of field screening technologies may be used to guide the final cleanup volumes and actions.

If you have any questions, please call me at (415) 222-8344, or Scott Wald at (415) 222-8217.

Sincerely,

Jim Sickles

Jim Sickles
Installation Coordinator
Hunters Point Shipyard

JS/ljt

Enclosures

cc: Anna-Marie Cook, U.S. EPA (2 copies)
Richard Hiett, RWQCB (1 copy)
Cyrus Shabahari, DTSC (1 copy)
File

TECHNICAL MEMORANDUM
REVIEW OF PCB OCCURRENCES IN SOIL AND GROUNDWATER
HUNTERS POINT ANNEX

1.0 INTRODUCTION

This technical memorandum responds to comments from the U.S. Environmental Protection Agency (EPA), on the Parcels B, C, D, and E *Draft Final Site Inspection Reports, Hunters Point Annex (EPA, 1995)*. The purposes of this memorandum are to provide information regarding the distribution of polychlorinated biphenyls (PCBs) in soil and groundwater in Parcels B through E at Engineering Field Activity West (EFA West), Hunters Point Annex (HPA), San Francisco, California and to propose an approach to remediating PCB-contaminated soil and groundwater at locations where concentrations above remediation goals have been identified.

The memorandum is organized as follows:

- Section 2.0 presents background information
- Section 3.0 describes the occurrence of PCBs in soil and the adequacy of soil characterization
  - Section 3.1 focuses on soil characterization at the SI sites and the rationale behind the Navy's characterization approach
  - Section 3.2 presents the soil characterization throughout Parcels B, C, D, and E and identifies areas where further characterization and/or remediation of soil are necessary
- Section 4.0 describes the occurrence of PCBs in groundwater at the site, the adequacy of the groundwater characterization, and recommendations for areas where additional characterization and/or remediation may be necessary

2.0 BACKGROUND

This study of PCBs in soil and groundwater was initiated in response to the April 26, 1995, letter from Claire Trombadore, U.S. Environmental Protection Agency (U.S. EPA), to Richard Powell and Michael McClelland, U.S. Navy, EFA West. In this letter, the EPA voiced concerned that the lateral and vertical extent of PCB contamination in soil at SI sites at HPA has not been adequately characterized. It has been the Navy's position that PCB occurrences at these sites have been characterized adequately for the remedial investigation (RI) and feasibility study (FS).

The data interpretation and recommendations regarding PCB occurrences at HPA, as documented in the SI reports for Parcels B, C, D, and E (*HLA, 1994b, c, d, e*), have been reevaluated in light of EPA guidance and policy in this area in response to a suggestion by the EPA in their April 26, 1995, comments. In particular, the *Polychlorinated Biphenyls Spill Cleanup Policy* under the Toxic Substances Control Act (TSCA), 40CFR761.125, and the *PCB Q&A Manual* (*EPA, 1994*), Section XIV, note that sites at which soil containing PCBs is excavated must be restored with clean soil, which is described as soil containing less than 1 part per million (ppm, approximately equal to 1 milligram per kilogram [mg/kg]) PCBs. *Guidance on Remedial Actions for Superfund Sites with PCB Contamination* (*EPA, 1990*),

Section 3.1.1, addresses determination of cleanup levels for PCB spills, and identifies 1 ppm as a level to which PCB concentrations should be reduced to be protective for residential land use scenarios and as a level generally below background. This concentration is identified in this EPA guidance document as a Preliminary Remedial Goal (PRG) for PCBs. This technical memorandum and the attached data tables and plates document an application of this value to interpretation of PCB occurrences in soil at HPA.

The EPA guidance document also states that covering PCB-contaminated soil with 10 inches of clean fill reduces the risk by an order of magnitude, indicating that an appropriate cleanup level for deeper soil in a residential area would be 10 mg/kg. The definition of deeper soil at HPA remains an issue, because it requires information on excavation depths during site development.

Several cleanup goals are available for groundwater, all of which are generally lower than reporting limits for PCBs. The need for removal actions or remediation must be evaluated in light of the potential for PCBs in groundwater at each site to reach human or environmental receptors.

3.0 REVIEW OF PCB OCCURRENCES IN SOIL

In the following sections, the occurrence of PCBs in soil and the adequacy of soil characterization are reviewed both specifically at the SI sites and site-wide in Parcels B, C, D, and E.

3.1 Review of PCB Occurrences in Soil at SI Sites

This section presents the results of the SI sampling activities, outlines the approach used to select sampling locations during the SI, and provides an assessment of the adequacy of characterization with respect to PCBs in soil at the SI sites.

3.1.1 Approach to Characterization

As outlined in the SI reports, the SI sampling strategy employed at HPA was to sample the probable worst-case locations at each site to evaluate whether contaminants had been released to the environment and to assess the need for conducting an RI. In the case of former transformer sites (PA-51 Sites), the worst-case locations, i.e., those most likely to have the highest soil concentrations of PCBs, were judged to occur within the limits of visible soil staining near transformer pads or from soil just below staining on asphalt or concrete near transformer pads. Because PCBs are known to be fairly immobile, samples collected at these locations are reasonably judged to represent the highest concentrations in the area. In the absence of any direct indication of the worst-case location at a former transformer site, samples were collected at representative locations. In addition to former transformer locations, samples were collected to evaluate the presence of PCBs in areas where hydrocarbon releases may have occurred, including soil beneath cracks in stained pavement, adjacent to sumps, and along fuel distribution line alignments.

3.1.2 Summary of Soil and PCB Analytical Results for SI Sites

Table 1 includes SI data from samples collected at former transformer locations (PA-51 Sites), other locations discussed in EPA's comments, and all other SI locations where PCB concentrations in soil were above 1 mg/kg. The table is organized by SI sample location,

with initial samples from each area listed first, followed by any subsequent samples collected for further investigation.

PCBs were detected in soil samples collected at 27 sites, including 13 former transformer locations in Parcels B, C, and D. The other 14 areas were in SI building and utility sites in Parcels B, C, D, and E. PCBs at concentrations greater than 1 mg/kg were detected in samples from 1 former transformer site and 10 other sites. The samples were collected either during the initial SI or during RI work adjacent to locations where PCBs were detected during the SI. All SI samples were collected at worst-case locations, and most were associated with surface stains or sheens on water, transformer pads, or bends in fuel lines.

3.1.3 Adequacy of Characterization at SI Sites

On the basis of EPA's promulgated regulations and supporting guidance regarding PCB cleanup, as described in the EPA documents referenced above, concentrations of PCBs in soil of 1 ppm or less are considered representative of background and are consistent with a definition of clean soil. Soil containing 1 ppm or less of PCBs is considered acceptable for residential land uses. These positions lead to an interpretation that soil containing PCBs at concentrations of 1 mg/kg or less requires no remedial action. Furthermore, for sites where sampling occurred in the most likely location for finding PCBs (e.g., at the center of a visible stain associated with a release from a PCB transformer, or immediately below a transformer location in instances where no visible soil staining was observed), this analysis concludes that, if the soil concentration in the most likely location is 1 mg/kg or less, no further characterization of the extent of PCBs is necessary.

Based on this rationale, additional samples generally were not collected and are not proposed for locations where 1) sampling occurred at the most likely location for characterizing maximum PCB concentrations and 2) results showed PCBs at concentrations less than 1 mg/kg. At these locations, the extent of PCBs has been adequately characterized for the purposes of risk assessment and feasibility study analysis. In addition, it would appear that a conclusion that no remedial action is necessary is consistent with EPA policy regarding PCB releases and cleanups.

In cases where additional samples were collected near an SI location that showed PCBs, the additional samples generally were collected within 40 feet and often within 10 feet of the initial sample locations. With one exception (PA29SS37), the additional samples show no PCBs or significantly lower concentrations of PCBs than the initial samples. These results indicate that the extent of PCBs in these areas has been adequately characterized for the purposes of risk assessment and feasibility study analysis.

In the case of PA29SS37, concentrations in subsequent samples indicate more extensive PCB contamination in the soil that most likely will require a cleanup action. Additional characterization may be necessary to develop adequate information to perform a risk assessment (RA) or feasibility study (FS).

For any locations identified for removal or remedial action, refining the extent of PCB contamination during a removal or remedial action could be useful. This could be accomplished using field techniques such as the immunoassay methods used in Parcel A to assess the presence and extent of pesticides in soil.

3.2 Review Of Site-Wide PCB Occurrences In Soil

The following sections present PCB concentrations in soil throughout HPA, assess the adequacy of characterization, and assess removal action opportunities. Data from soil samples collected during all SI and RI programs conducted in Parcels B, C, D, and E during the date ranges shown in Section 3.2.1 below are included in this evaluation.

3.2.1 Summary of PCB Analytical Results for Soil Samples, Parcels B, C, D, and E

The attached Tables 2a through 2d and Plates 1 through 4 present data from soil samples collected from borings, wells, test pits, and surface soil locations in Parcels B, C, D, and E. All PCB concentrations detected in soil samples are listed in Tables 2a through 2d; the tables are organized by parcel and sample location number.

The locations where PCBs were detected in soils are highlighted on Plates 1 through 4. The colors on the plates illustrate whether a sample location was associated with an IR-51 site (former transformer location) or other site. The color scheme also denotes whether the maximum total PCB concentration in a sample from the sampling location is greater or less than 1 mg/kg. Sample locations where PCBs have been detected at concentrations greater than 1 mg/kg were assigned a PCB area number that corresponds to an area on the plates and references in Tables 2 and 3.

The distribution of PCBs by parcel is as follows:

Parcel	Number of Locations with PCBs Detected in Soils			Number of Samples in Which PCBs Were Detected		
	<1 mg/kg	>1 mg/kg	Total	<1 mg/kg	>1 mg/kg	Total
B	30	13	43	47	14	61
C	36	10	46	46	10	56
D	83	7	90	103	8	111
E	71	88	159	120	144	264
Total	220	118	338	316	176	492

The date ranges within which samples were collected in the parcels are as follows:

Parcel	From	To
B	December 1988	May 1995
C	January 1993	May 1995
D	November 1988	October 1994
E	December 1988	October 1994

Plates 1 through 4 show that PCBs occur in soil throughout HPA. However, in Parcels B, C, and D, occurrences of PCBs above the PRG of 1 mg/kg are few. PCB occurrences above 1 mg/kg are associated with pipelines, stains, transformers, an offsite industrial landfill (IR-18), and IR-6, the Tank Farm, in Parcel B; with the kiln room, stains, and transformers in Parcel C; and with IR-8 (the PCB Spill Area) and stains in the Wagner Construction Yard (IR-36) in Parcel D. These occurrences are numbered on Plates 1 through 3, and described in Table 2. PCBs at IR-6 and IR-8 were considered in the Operable Unit (OU) II RI and FS (*HLA, 1992a, 1992b*). Some of the other occurrences were discussed in the Site Inspection (SI) reports for Parcels B, C, and D (*HLA, 1994b, c, d*), and others have been discovered during the recent RI.

In Parcel E, the number of locations where PCBs exceed the PRG is much greater and occurrences are distributed more widely than in the other parcels (Plate 4). PCBs above the PRG are common throughout the shallow and deep soil in IR-1/21, IR-4 and IR-12, and more sporadically in IR-2, IR-3, IR-5, IR-13, and IR-14. Discussions of these areas have been presented in the OU I Summary of Remedial Investigation (*HLA, 1993c*), OU III Alternative Selection Report (ASR) (*HLA, 1993a*), and the Group 5 ASR (*HLA, 1993b*).

3.2.2 Adequacy Of Site-Wide Soil PCB Characterization

It is the Navy's position that the extent of PCBs has been adequately characterized for the purposes of RA and FS analysis at the SI sampling locations. Adequate characterization of known PCB occurrences in soil has also been accomplished throughout Parcels B, C, and D. In some areas where PCBs were identified during earlier phases of investigation (e.g., OU I, III, and Group 5), the extend of PCBs is not well defined and the measured concentrations may not represent maximum concentrations, meaning that additional characterization may be necessary prior to completing an RA or FS. Field screening techniques could be used to provide additional characterization results.

3.2.3 Assessment of Removal Action Opportunities

Table 3 presents current and previously documented recommendations for addressing soil having PCB occurrences greater than or equal to 1 mg/kg. All PCB concentrations greater than 1 mg/kg detected in soil samples from Parcels B, C, D, and E are listed in Table 3 and grouped according to location. Each sample location or group of adjacent sample locations is assigned a PCB Area number in the table. The table lists comments on previous investigations in the area and other information used as the basis for the recommendations, such as the presence of stains, other soil contaminants, and samples from neighboring locations. Where PCBs have previously been addressed, either through the ASR or FS process, recommendations from these studies are noted. Most of the PCB areas are described by one or a few sampling locations; some areas in Parcel E comprise several or multiple sampling locations and are described more generally.

Many of the PCB sites listed in Table 3 are considered suitable for exploratory excavation removal action. Table 4 lists estimated soil volumes for locations proposed for the exploratory excavation removal actions in Table 3; only those sites recommended in Table 3 are listed in Table 4. The table lists by parcel the PCB Area number, dimensions and volume of the area to be removed, and additional information used to prepare the estimate.

The areas recommended for exploratory excavation could be addressed in the framework of the Process Engineering Evaluation/Cost Analysis (Process EE/CA) approach which the Navy and the agencies have discussed (and the agencies have approved in concept). Planning and implementation of any exploratory excavations would benefit from prior or concurrent use of field analytical techniques such as immunoassay to refine the extent of soil to be removed. For example, in several of the Parcel E areas recommended for exploratory excavations, the lateral extent of PCBs is not well constrained; additional field screening should be completed to assess the extent of excavation. This technique is recommended in particular for PCB areas where the PCBs appear to occur in isolated locations in shallow soil.

Assumptions for preparing the soil volume estimates are listed at the end of Table 4. Depths were set at 3 feet for all cases where shallow soil PRG exceedances were in the top 0 to 3 feet, with or without vertical control. In cases where the PRG exceedances were between 3 and 6 feet deep, a 6-foot depth was assumed. PCBs at depths greater than 6 feet were considered too

deep for excavation. In the cases of single, isolated PCB detections with or without non-detects nearby (within 100 feet), limited excavation using a 6-foot-wide excavator bucket to the indicated depth was assumed. For shallow occurrences of PCBs, a 6-foot by 6-foot cut was assumed to be sufficient. For deeper PCBs, the cut would be 6 feet wide, but the length would depend on target depth; the deeper the target, the longer the cut would have to be. In cases where there was limited lateral control, the lateral extent of the excavation was estimated to be 10 feet to either side of a PCB sample location. Where there were non-detectable concentrations nearby, the lateral extent of the excavation was set at 5 feet to either side of the PCB sample location.

4.0 REVIEW OF SITE-WIDE PCB OCCURRENCES IN WATER

The following sections present PCB concentrations in groundwater and surface water (storm water and sanitary sewer) samples and comparison of this data with cleanup standards. The adequacy of characterization and removal action opportunities are also discussed.

4.1 Summary of PCB Analytical Results from Water Samples, Parcels B, C, D, and E

Table 5 and Plate 5 present data for Parcels B, C, D, and E from groundwater samples collected from groundwater wells, HydroPunch borings, and grab samples. In addition, results from surface runoff and storm drain samples collected during a stormwater sampling event in December 1990, and water samples collected from the sanitary sewer system are also presented. Data from water samples collected from sumps are not presented because the sumps are not considered representative of groundwater or surface water conditions. The table is organized by parcel and station name.

Concentrations detected in these samples range from 0.3 to 630 micrograms/liter (µg/l). Typically, the reporting limit for the different PCB Aroclors is 1.0 µg/l; the reporting limits range from 0.5 to 110 µg/l. Groundwater data are compared to three different water quality standards issued by the U.S. Environmental Protection Agency (EPA): National Ambient Water Quality Criteria (NAWQC), PRGs for tap water, and Maximum Contaminant Levels (MCLs). Storm drain and runoff data are not compared to PRGs and MCLs because these criteria are applicable to drinking water sources only; none of the criteria are applied to the sanitary sewer data because the contents of the sewer are conveyed to the City and County of San Francisco's wastewater treatment system. No further work is recommended for the sanitary sewer system. Also, comparison of groundwater data to MCLs or tap water PRGs may not be appropriate, because groundwater is not used as a drinking water source at HPA, and does not meet agency definitions of potential drinking water sources in some areas of tidal influence. For PCBs, the NAWQC is 0.03 µg/l; the MCL is 0.5 µg/l, and the PRG is 0.0087 µg/l for all PCBs encountered in groundwater at HPA except Aroclor 1254, for which the PRG is 0.73 µg/l. All detected concentrations of PCBs in groundwater at HPA exceed the NAWQC and PRGs, and all but three exceed the MCL. Detections of PCBs in stormwater samples exceed the NAWQC. In addition, the reporting limits of 0.5 to 110 µg/l equal or exceed all of these criteria; therefore, PCBs at concentrations exceeding the water quality criteria may be present but undetected at HPA.

The locations where PCBs were detected in water samples are highlighted on Plate 5. The colors on the plate illustrate the type of sample (well, HydroPunch or grab, runoff, sanitary or storm drain) collected at that location. The distribution of PCBs in water by parcel is as follows:

Parcel	Number of Locations with PCBs Detected in		Number of Samples with PCBs Detected in	
	Groundwater	Surface Water	Groundwater	Surface Water
B	3	1	8	6
C	5	2	7	2
D	3	1	5	1
E	27	0	64	0
Total	38	4	84	9

PCBs were detected in two storm drains sampled as part of the stormwater sampling event conducted by HLA in December 1990 (*HLA, 1991*). Aroclor 1260 was detected in one surface runoff sample and five of the six storm drain samples collected at SW1, and one of the five storm drain samples collected at SW2. High concentrations of Aroclor 1260 (6 and 24 mg/kg at SW1 and SW2, respectively),were also detected in storm drain sediment samples collected at these two locations. An attempt has already been made to link surface source areas with storm drain contaminants (*HLA, 1994*). No further characterization of PCB occurrences in stormwater is recommended.

Occurrences of PCBs in groundwater in Parcels B, C, and D are few and isolated. There are localized occurrences in IR-25 (Parcel B); IR-28, IR-29, and IR-58 (Parcel C); and IR-08 and IR-39 (Parcel D). Only IR28MW171A appears to be within the zone of tidal influence. In Parcel E, PCBs occur both at isolated locations (IR05MW73A and IR02MWB-5) and in more widespread regions. PCBs occur throughout the A-aquifer in IR-1/21 (the Industrial Landfill) and the western portion of IR-2 (the Bay Fill Area) where it is also common in soil at depths above and below the water table. PCBs in both groundwater and soil also occur in and around IR-3 (Oil Reclamation Ponds). These areas in IR-1/21, IR-2, and IR-3 are generally within the zone of tidal influence.

The PCB concentrations detected in groundwater at HPA may suggest the presence of dense non-aqueous phase liquid (DNAPL) at most locations. A general rule of thumb is that DNAPLs can be suspected whenever the concentration in groundwater exceeds 1% of the solubility of the compound. The solubilities and concentration ranges of the PCB compounds found in groundwater samples from HPA are as follows:

PCB Compound	Range of Measured Solubilities[1] (µg/l)	1% of Maximum Reported Solubility (µg/l)	Range of PCB Compound Concentrations at HPA (µg/l)
Aroclor 1242	45-750	7.5	2-250
Aroclor 1248	43-320	3.2	2
Aroclor 1254	12-300	3.0	1-630
Aroclor 1260	3-250	2.5	0.3-90

1 Reported in Mackay, D., Suiz, W.Y., and Ma, K.C., 1992. *Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals, Volume 1, Monoaromatic Hydrocarbons, Chlorobenzenes, and PCBs:* Michigan. Lewis Publishers. 697 p.

The above solubilities are for pure compounds only, are not adjusted for mixtures of compounds, and do not take into account the presence in unfiltered samples of soil particles on which PCBs may be sorbed. It should also be noted that detections of compounds below

these concentrations do not preclude the presence of DNAPL. Using the above solubilities as a guideline, it appears that DNAPL may be present at many of the sampling locations where PCBs are present in the groundwater.

To deal with the effect of soil particles in groundwater samples on PCB concentrations, a few samples collected in 1992 were filtered before analysis. Results of PCB concentrations in three of them can be compared with unfiltered counterparts listed in Table 5. In all 3 cases, the PCB concentrations decreased, but remained above the water quality standards. The filtered sample results were also above the 1% solubility values, suggesting that DNAPLs may be present.

In general, this suggestion that PCBs are present as DNAPL is not supported by soil data, which show low concentrations of PCBs, with the particular exception of some areas in Parcel E. This may indicate that water concentrations reflect PCBs adsorbed to particulates able to pass through 0.45 micron filters, or may indicate the presence of random isolated areas of elevated PCB levels in soil, particularly in areas of mixed fill, including IR-1 (Industrial Landfill), IR-2 (Bay Fill Area), and IR-3 (Oil Reclamation Ponds).

4.2 Adequacy of Site-Wide Characterization of PCBs in Groundwater

HLA has evaluated the adequacy of characterization at each location where PCBs are present in groundwater. Following are the results of the evaluation for each site.

4.2.1 Parcel B

PCBs have been detected in groundwater samples from three wells in IR-25. No PCBs have been detected in wells located north and south of the three wells. There are no wells located east of IR25MW16A; additional sampling in this area has already been recommended to locate the source of trichloroethene (TCE) observed in samples from Well IR25MW16A. The recommended program will also address the extent of PCBs in groundwater in this area.

4.2.2 Parcel C

PCBs have been detected in samples from five wells in Parcel C. Low concentrations of Aroclor 1260 were detected in one groundwater sample collected from Wells IR58MW31A and IR28MW129A, and three samples from Well IR28MW171A. Well IR58MW31A is adjacent to underground storage tanks (USTs) S-219 and S-251, which have been removed. Additional work has been proposed downgradient of the USTs at SA-94 (*HLA, 1994a*). Well IR28MW129A is located within well-defined plumes of vinyl chloride and 1,2-dichlorethene; additional characterization is unnecessary for this well. There are no other wells within 400 feet of IR28MW171A, which is in the zone of tidal influence; therefore, it is recommended that HydroPunch borings be used to delineate the lateral extent of PCBs in the groundwater in this area.

PCBs have also been detected in one groundwater sample from Well IR50MW13F and one from Well IR29MW48A. These two wells are located on the north side of Drydock 4 and are about 270 feet apart. Monitoring wells located 30 feet north of IR50MW13F and within 150 feet east and north of IR29MW48A did not show the presence of PCBs. However, the groundwater between the two wells has not been sampled. Additional HydroPunch borings between the two borings should be attempted, to assess whether PCB occurrences at these two wells are isolated or representative of one large area of elevated PCB levels in groundwater; however, note that several HydroPunch borings in the area were dry or met refusal in bedrock.

4.2.3 Parcel D

There are two isolated occurrences of PCBs in Parcel D groundwater. Well IR08MW42A is located in the middle of the IR-8 PCB spill area. The well is screened from 1.5 to 21 feet below ground surface (bgs) in an area where soil was excavated to a depth of 8 feet during an interim action (*HLA, 1992*). PCBs were not detected in samples from three wells within 150 feet of IR08MW42A. Because the probable source of PCBs at this location is the spill, no further characterization is recommended. PCBs were detected in one well (IR39MW21A) and one HydroPunch groundwater sample (IR39B016) in IR-39. Eleven other HydroPunch groundwater samples were collected in the area and submitted for PCB analyses; no other PCBs were detected. Further characterization of PCBs in this area is not considered necessary, although further work has been recommended to monitor a petroleum hydrocarbon plume in the area.

4.2.4 Parcel E

PCBs in groundwater in Parcel E occur in two isolated areas and two larger areas. PCBs were measured in one sample from Well IR05MW73A in IR-05 (Transformer Storage Area). The PCBs are associated with petroleum hydrocarbons, metals, and PCBs in the soil. Additional HydroPunch borings are recommended to the south and west of this location, to characterize the lateral extent of PCBs in the groundwater in this area.

Samples from Emcon Monitoring Well IR02MWB-5 show moderate levels (10-17 µg/l) of PCBs within the zone of tidal influence. Additional characterization of PCBs in this area is not considered necessary because the complex soil and groundwater problems in the area will need to be addressed on a large scale and comprehensively.

PCBs occur in the groundwater throughout IR-3 (Oil Reclamation Ponds), at concentrations ranging from 0.5 to 290 µg/l. PCB occurrences in groundwater in this area have been adequately characterized.

PCBs also occur throughout the A-aquifer in IR-1/21 and along the shoreline at the north end of IR-2. PCB concentrations range from 0.5 to 54 µg/l in groundwater samples from wells in these areas; in one unfiltered grab groundwater sample, a concentration of 630 µg/l was reported for Aroclor 1254. PCBs have not been detected in B-aquifer wells in these areas. The groundwater has been adequately characterized in these areas for evaluating possible removal/remedial actions.

4.3 Assessment Of Groundwater Removal Action Opportunities

Groundwater removal action opportunities have been addressed for all locations where PCBs are present. The following is a summary of this assessment.

4.3.1 Parcel B

PCB occurrences in groundwater in Parcel B are associated with the solvent sump and potential presence of solvent DNAPL beneath Building 134. The presence of PCBs at low concentrations is of secondary importance to the other chemicals present at this location, but should be considered when evaluating any possible removal actions for DNAPLs in this area.

4.3.2 Parcel C

Further characterization of PCBs in groundwater is required at Well IR58MW31A in Parcel C. HydroPunch samples collected during the SA-94 investigation may provide adequate information. Removal actions for volatile organics compounds in the eastern portion of IR-28 should take into account the localized presence of PCBs at Well IR28MW129A.

At IR28MW171A in Parcel C, the results of the third round of groundwater monitoring should be reviewed with currently available data. The low measured concentrations at this location are not likely to be observable at locations closer to the bay. This location appears to be a poor candidate for a removal action.

At the area north of Drydock 4 in IR-29, the low concentrations are limited in extent and do not appear to constitute an imminent threat to human or environmental receptors. Removal actions are not recommended.

4.3.3 Parcel D

The two areas in Parcel D also are limited in extent and do not appear to constitute an imminent threat to human or environmental receptors. Removal actions are not recommended; however, the presence of PCBs should be considered when planning removal or remedial actions for petroleum hydrocarbons in IR-39.

4.3.4 Parcel E

The PCB occurrences in groundwater and the possibility of PCB DNAPL in Parcel E are part of larger, more complex problems (e.g., hydrocarbons at IR-3), and should be addressed in the context of evaluating and planning removal actions or remedial actions for these problems.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 PCB Occurrences in Soil

The following conclusions and recommendations pertain to PCBs in soil at HPA:

- Federal regulations and EPA guidance identify a PRG of 1 ppm for PCBs in soil, and consider soil containing less than 1 ppm PCBs as clean.

- Site characterization activities completed at HPA through and including efforts under CTO 276 have identified PCBs in 492 soil samples at 338 sampling locations in Parcels B, C, D, and E. Of these, PCB concentrations exceeded 1 mg/kg in 176 samples from 118 sampling locations in these parcels.

- At most locations, occurrences of PCBs in soil are adequately characterized to perform a risk assessment and feasibility study. At some locations, particularly in Parcel E, the extent of PCBs is not well defined, and measured concentrations may not represent maximum concentrations (Table 3). Additional limited field screening in these areas would reduce the uncertainties in the risk assessment for this parcel.

- Of 29 areas where PCBs occur at concentrations above 1 mg/kg, 17 areas, with an estimated volume of about 1,200 cubic yards, are recommended for exploratory excavation. The other 11 areas either need no further action, were recommended for no interim action during previous studies, or are within areas of complex contamination.

- PCB areas recommended for exploratory excavation removal actions could be addressed within the framework of the Process Engineering Evaluation/Cost Analysis.

- The actual volume of soil containing PCBs at concentrations above 1 mg/kg likely can be reduced from the estimated volume through the use of field screening techniques either prior to or during any excavation activities.

5.2 PCB Occurrences in Groundwater

The following conclusions and recommendations pertain to PCBs in groundwater at HPA:

- Site characterization activities completed at HPA through and including efforts under CTO 276 have identified PCBs in 84 groundwater samples at 38 sampling locations in Parcels B, C, D, and E. PCB concentrations in all of these samples exceeded PRGs and NAWQC for PCBs, and all but three exceeded MCLs for PCBs. PCBs also were identified in 9 surface water samples at 4 sampling locations in Parcels B, C, and D. PCB concentrations in all of these samples exceeded the NAWQC for PCBs.

- At most locations, occurrences of PCBs in groundwater are adequately characterized to perform a risk assessment and feasibility study.

- Additional investigation of PCB occurrences in groundwater is recommended at IR28MW171A, between IR50MW13F and IR29MW48A, and at IR05MW73A.

- Groundwater removal actions targeting PCBs are not recommended at any location at HPA; however, the presence of PCBs should be considered when planning removal/remediation actions at complex sites.

REFERENCES

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Table 1. Occurrences of PCBs at Site Inspeciton Sites
Hunters Point Annex
San Francisco, California

Parcel	Site	Sampling Location	Results (mg/Kg)	Rationale for Sampling Location	Further Actions Proposed	Comments/Actions
IR-51 Sampling Locations						
B	PA51	SS01	0.30	sheen on sump water; no stains on concrete	No	Sample collected immediately adjacent to sump under intact concrete transformer pad. PCBs less than EPA Guidance PRG of 1 ppm; responds to EPA Comment 1, Parcel B (EPA, 1995)
B	PA51	SS02	15.00	Staining on concrete floor at former transformer location	Yes	Sample collected at most likely location; drilled Borings IR51B022-23 to investigate
B	PA51	SS03	0.45	Staining on concrete floor at former transformer location	Yes	Sample collected at most likely location; drilled Borings IR51B022-23 to investigate
B	IR51	B022	ND	Staining on floor; PCBs in samples from SS02		Drilled within 15 feet of SS02; ND to 6.25 ft
B	IR51	B023	ND	Staining on floor; PCBs in samples from SS02		Drilled within 15 feet of SS02; ND to 6.25 ft
B	PA51	SS04	ND	Staining on concrete floor beneath former transformer location	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
B	PA51	SS05	0.034	Staining on concrete floor beneath former transformer location	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
B	PA51	SS06	ND	Staining beneath leaking transformer w/ PCB label; concrete thick and intact.	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm SA79B003 proposed within 30 feet of SS06
B	PA51	SS07	ND	Staining beneath leaking transformer w/ PCB label	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm; SA79B004 proposed within 30 feet of SS07
C	PA51	SS08	0.02	Stained area under former transformer location; cracked asphalt in area	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm

Table 1. Occurrences of PCBs at Site Inspeciton Sites
Hunters Point Annex
San Francisco, California

Parcel	Site	Sampling Location	Results (mg/Kg)	Rationale for Sampling Location	Further Actions Proposed	Comments/Actions
C	PA51	SS09	ND	Soil beneath concrete at tar-like substance; concrete intact; sample near SS10	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
C	PA51	SS10	0.03	Soil beneath intact concrete at former transformer location; no staining; sample near SS09	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
C	PA51	SS11	0.38	Sampled beneath stained cracked asphalt near SS12	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
C	PA51	SS12	0.35	Sampled beneath stained cracked asphalt near SS11	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
C	PA51	SS13	0.30	Former transformer location; sampled beneath stained concrete	Yes	Sample collected at most likely location; PCBs less than EPA Guidance PRG of 1 ppm; drilled IR28B089 within 10 feet to investigate nearby floor scrape
	IR28	B089	ND	PCBs in samples from PA51SS13 and PA28FS15		Drilled within 10-15 feet of PA51SS13, PA28FS15
C	PA51	SS14	0.26	Soil beneath concrete at location of free product; former transformer location; concrete intact	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
C	PA51	SS15	140.00	Sampled beneath minor staining on concrete; sheen on puddles	Yes	Sample collected most likely location; drilled Plan 2 Borings IR51B025-27 to investigate
C	PA51	SS16	1.50	Sampled beneath tar-like stains on concrete floor; sheen on puddles	Yes	Sample collected most likely location; drilled Plan 2 Borings IR51B025-27 to investigate
C	IR51	B025	1.40	PCBs in samples from PA51SS15 & -16		Drilled within 10 feet of SS16; PCBs at 1.5 feet; ND to 6.25 ft
C	IR51	B026	ND	PCBs in samples from PA51SS15 & -16		Drilled within 10 feet of SS15
C	IR51	B027	ND	PCBs in samples from PA51SS15 & -16		Drilled 20 feet from SS16

Table 1. Occurrences of PCBs at Site Inspeciton Sites
Hunters Point Annex
San Francisco, California

Parcel	Site	Sampling Location	Results (mg/Kg)	Rationale for Sampling Location	Further Actions Proposed	Comments/Actions
C	PA51	SS17	1.40	Transformer pad; no staining observed on concrete pad or surroundings	Yes	Composite samples adjacent to intact pad; drilled Plan 2 Borings IR51B028-31 (for EE24)
C	IR51	B028	ND	PCBs in sample from PA51SS17		Drilled within 10 feet of PA51SS17 location
C	IR51	B029	ND	PCBs in sample from PA51SS17		Drilled within 30 feet of PA51SS17 locations
C	IR51	B030	ND	PCBs in sample from PA51SS17		Drilled within 10 feet of PA51SS17 locations
C	IR51	B031	0.33	PCBs in sample from PA51SS17		Drilled within 10 feet of PA51SS17 locations; PCBs only at 1.5 feet
C	PA51	SS18	0.50	Some staining on concrete beneath active transformer in enclosed, open top area	No	Sampled soil adjacent to open top area at worst case location; less than EPA Guidance PRG of 1 ppm
D	PA51	SS19	0.04	Stain on concrete floor near transformer	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
D	PA51	SS20	ND	Stain on concrete floor beneath transformer	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
D	PA51	SS21	ND	Stain asphalt below transformer	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
	IR22	MW15	ND	Drilled 30 feet from SS21		Drilled for aquifer test previous to SI; ND at 2 ft
Additional SI and RI Hits						
B	PA24	B004	1.40	Area of observed staining in vicinity of transformers	Yes	Stained soils to be removed with IR-46 fuel line removal; onsite immunoassay recommended; responds to EPA Comment 2, Parcel B (EPA, 1995)
B	PA25	SS04	3.80	Surface soil beneath floor of utility vault	Yes	Soils to be removed with IR-46 action
	PA46	TA03	ND	Bend in fuel line	Yes	Soils to be removed with IR-46 action

Table 1. Occurrences of PCBs at Site Inspeciton Sites
Hunters Point Annex
San Francisco, California

Parcel	Site	Sampling Location	Results (mg/Kg)	Rationale for Sampling Location	Further Actions Proposed	Comments/Actions
B	PA26	SS02	1.50	Sampled at stains on floor	Yes	Composite sample; drilled Borings IR26B010-B013 to investigate
	IR26	B010	ND	PCBs in sample from PA26SS02		Drilled within 70 feet of SS02 location
	IR26	B011	ND	PCBs in sample from PA26SS02		Drilled within 10 feet of SS02 location
	IR26	B012	ND	PCBs in sample from PA26SS02		Drilled within 20 feet of SS02 location
	IR26	B013	ND	PCBs in sample from PA26SS02		Drilled within 10 feet of SS02 location
B	PA46	TA10	1.50	Bend in fuel line	Yes	Soil will be removed in conjunction with fuel line removal; onsite immunoassay recommended
B	PA46	TA11	1.90	Bend in fuel line	Yes	Soil will be removed in conjunction with fuel line removal; onsite immunoassay recommended
C	PA28	FS15	800.00	Floor scrape at stain, Substation E	Yes	Collected within 15 feet of PA51SS13; drilled Boring IR28B089 to investigate (see above)
C	PA28	SS74	1.20	Cracked asphalt, paint stains	Yes	Sampled beneath asphalt; proposed 3 HP borings (B194-B196)
	IR28	B194	ND	PCBs in sample from PA28SS74		Drilled within 40 feet of PA28SS74
	IR28	B195	ND	PCBs in sample from PA28SS74		Drilled within 10 feet of PA28SS74
	IR28	B196	ND	PCBs in sample from PA28SS74		Drilled within 10 feet of PA28SS74
C	PA29	SS37	4.60	Hydrocarbon stains in kiln room	Yes	Drilled Plan 2 borings IR29B072-75
C	IR29	B073	1.70	PCBs in sample from PA29SS37		Drilled within 20 feet of SS37
C	IR29	B074	39.00	PCBs in sample from PA29SS37		Drilled within 30 feet of SS37, outside building
C	IR29	B075	1.20	PCBs in sample from PA29SS37		Drilled within 10 feet of SS37
C	PA58	SS08	1.50/1.20	Stain with product-like odor in vehicle area	Yes	Drilled Boring IR58B020 to investigate
	IR58	B020	ND	PCBs in sample from PA58SS08		Drilled within 10 feet of SS08

Table 1. Occurrences of PCBs at Site Inspeciton Sites
Hunters Point Annex
San Francisco, California

Parcel	Site	Sampling Location	Results (mg/Kg)	Rationale for Sampling Location	Further Actions Proposed	Comments/Actions
D	PA39	B004	0.11	Compounds detected in Emcon samples collected in the area	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
	PA39	B005	0.11	Compounds detected in Emcon samples collected in the area	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
	PA39	MW02A	0.07	Compounds detected in Emcon samples collected in the area	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm
E	PA47	TA04	0.13	Bend in fuel line	Yes	Remove fuel line and related soil; no indication of PCB spill but potential for fuel leak; less than EPA Guidance PRG of 1 ppm; responds to EPA Comment 3, Parcel E (EPA, 1995)
	PA52	SS01	0.18	Oil stain along railroad right of way	Yes	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm; responds to EPA Comment 3, Parcel E (EPA, 1995)
	IR52	B001	ND	Compounds in surface samples along right-of-way		Drilled within 25 feet of SS01
	PA52	SS06	0.059	No staining; sampled in open field along railroad tracks	Yes	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm; responds to EPA Comment 3, Parcel E (EPA, 1995)
	IR52	B004	ND	Compounds in surface samples along right-of-way		Drilled within 10 feet of SS06
	PA54	SS01	0.020	No staining - open field	No	Sample collected at most likely location; less than EPA Guidance PRG of 1 ppm; responds to EPA Comment 3, Parcel E (EPA, 1995)

ND Not detected

For more information on sampling locations in this table, see Parcel B SI Report (HLA, 1994b), Table 3
Parcel C SI Report (HLA, 1994c), Tables 3 and 12
Parcel D SI Report (HLA, 1994d), Tables 3 and 12
Parcel E SI Report (HLA, 1994e), Table 3

Table 2a. PCB Concentrations in Parcel B Soil Samples
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR06B031	9022G268	0.75	Aroclor 1260	150	59	A	PCB-1
IR06B031	9022G269	4.75	Aroclor 1260	0.3	0.057	A	
IR06B033	8945H060	1.25	Aroclor 1260	0.3	0.19	A	
IR06B033	8945H061	2.75	Aroclor 1260	0.2	0.18	A	
IR06B039	9022H226	0.75	Aroclor 1260	0.08	0.057	A	
IR06B039	9022H227	5.75	Aroclor 1260	4.9	0.064	A	PCB-1
IR06MW22A	9022F041	5.25	Aroclor 1260	0.5	0.063	A	
IR06SS14	8902A150	0.25	Aroclor 1260	0.6	0	A	
IR07B011	9132H796	1.75	Aroclor 1260	0.3	0.87	J5	
IR07B011	9132H797	3.75	Aroclor 1260	0.2	0.18	J5	
IR07B025	9132H789	1.25	Aroclor 1260	0.06	0.17	J5	
IR07B044	9223H264	3.75	Aroclor 1254	0.1	0.19	A	
IR18B015	9316A725	6.75	Aroclor 1260	0.1	0.038	J3	
IR18B015	9316A726	11.75	Aroclor 1260	0.06	0.038	A	
IR18B023	9416R027	26.25	Aroclor 1260	0.03	0.04125	J5	
IR18B026	9417C166	3.75	Aroclor 1254	0.09	0.035	V	
IR18B028	9525A085	1.25	Aroclor1260	3.4	0.34	A	PCB-29†
IR18B028	9525A091	26.25	Aroclor 1254	0.05	0.041	A	
IR18B029	9525A078	1.25	Aroclor 1254	12	3.6	J3	PCB-29
IR18B029	9525A080	6.25	Aroclor 1254	0.1	0.041	A	
IR18B029	9525A080	6.25	Aroclor 1260	0.06	0.041	A	
IR18B029	9525A081	11.25	Aroclor 1260	0.07	0.17	A/J	
IR18B029	9525A083	20.25	Aroclor 1260	1.20	0.77	A	
IR18MW21A	9316A716	1.75	Aroclor 1260	0.4	0.036	A	
IR18MW21A	9316X717	4.25	Aroclor 1260	0.05	0.039	A	
IR20B004	9319A979	1.75	Aroclor 1260	0.02	0.041	A	
IR20B004	9319A981	6.75	Aroclor 1260	0.3	0.04	J5	
IR20B004	9319A982	11.75	Aroclor 1260	0.4	0.04	J35	
IR20B005	9320A986	1.75	Aroclor 1260	0.3	0.038	J35	
IR20B005	9320A987	3.75	Aroclor 1260	0.4	0.04	J35	
IR20B005	9320A988	6.25	Aroclor 1260	0.5	0.4	VJ5	
IR20B010	9319A930	16.25	Aroclor 1260	3.1	0.19	A	PCB-2
IR20B012	9318A884	1.75	Aroclor 1260	0.02	0.035	A	
IR20MW01A	9319G729	2.25	Aroclor 1260	0.03	0.039	J3	
IR20MW11A	9319A920	1.75	Aroclor 1260	0.06	0.038	A	
IR25B012	9347A106	6.25	Aroclor 1260	0.05	0.038	A	
IR25B012	9347A108	16.25	Aroclor 1260	0.06	0.038	A	
IR25B013	9347A100	1.25	Aroclor 1260	2.4	0.37	A	PCB-3
IR25MW11A	9347A111	1.25	Aroclor 1260	0.02	0.039	A	
IR26B039	9441A163	11.25	Aroclor 1260	0.01	0.037	A	
IR46B017	9401A192	1.75	Aroclor 1260	26	0.38	A	PCB-4
IR46B017	9401A193	6.75	Aroclor 1260	0.04	0.038	A	
IR46B017	9401A194	11.75	Aroclor 1260	0.08	0.038	A	
IR46B032	9411A616	6.25	Aroclor 1260	0.5	0.03708	J5	
PA23SS04	9303X841	0.25	Aroclor 1260	0.6	0.39	J3	

Table 2a. PCB Concentrations in Parcel B Soil Samples
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
PA23SS06	9303X842	0.25	Aroclor 1260	0.07	0.038	J3	
PA24B002	9303N047	6.75	Aroclor 1260	0.1	0.0366	J3	
PA24B004	9303N049	2.25	Aroclor 1260	1.4	0.179	VJ3	PCB-4
PA24B005	9303N059	9.25	Aroclor 1260	0.05	0.0343	J3	
PA25SS04	9303X851	0.75	Aroclor 1260	3.8	0.44	A	PCB-5
PA26SS02	9303X843	0.25	Aroclor 1260	1.5	0.39	A	PCB-6
PA42B004	9306H403	6.25	Aroclor 1260	0.06	0.038	J3	
PA42B004	9306H403	6.25	Aroclor 1254	0.06	0.038	J3	
PA46TA01	9304D014	2.25	Aroclor 1260	0.02	0.036	J3	
PA46TA02	9304D015	2.25	Aroclor 1260	0.09	0.038	J3	
PA46TA07	9305H397	2.25	Aroclor 1260	0.4	0.037	A	
PA46TA07	9305H398	2.25	Aroclor 1260	0.08	0.0366	A	
PA46TA10	9305D022	2.25	Aroclor 1260	1.5	0.0379	J5	PCB-7
PA46TA11	9305D023	2.25	Aroclor 1260	1.9	0.0366	J35	PCB-7
PA51SS01	9310N155	1.75	Aroclor 1242	0.3	0.039	A	
PA51SS02	9309A645	0.75	Aroclor 1260	15	0.41	A	PCB-8
PA51SS03	9309A646	0.75	Aroclor 1260	0.5	0.039	A	
PA51SS05	9307A604	1.25	Aroclor 1260	0.03	0.038	A	

* Validation assigned qualifiers:
- A: Based on cursory validation, analytical results for this compound are acceptable without qualification.
- J3: Analytical results for this compound are qualified as estimated due to noncompliance with spike recovery criteria.
- J5: Analytical results for this compound are qualified as estimated due to noncompliance with holding time criteria.
- J35: Analytical results for this compound are qualified as estimated due to noncompliance with spike recovery and holding time criteria.
- V: Analytical result received a full CLP validation.

** Corresponds to area designations on Plate 1 and Tables 3 and 4.

† Numbering sequence out of order because data were not validated until after first publication of this table.

Table 2b. PCB Concentrations in Parcel C Soil Samples
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR28B084	9419C203	4.75	Aroclor 1260	0.3	0.03794	V	
IR28B084	9419C204	9.25	Aroclor 1260	0.03	0.0386	J3	
IR28B086	9411N457	0.75	Aroclor 1260	0.1	0.03511	VJ3	
IR28B086	9411N457	0.75	Aroclor 1242	0.06	0.03511	VJ3	
IR28B104	9425A929	6.25	Aroclor 1260	0.03	0.04074	J5	
IR28B117	9413A707	6.25	Aroclor 1260	0.03	0.04074	A	
IR28B118	9405N287	1.75	Aroclor 1260	0.2	0.03511	J3	
IR28B137	9403N232	5.25	Aroclor 1260	0.1	0.2	A	
IR28B183	9421L515	2.75	Aroclor 1260	0.09	0.034	J3	
IR28B183	9421L516	4.75	Aroclor 1260	0.2	0.034	A	
IR28B227	9418C180	3.75	Aroclor 1260	0.08	0.03793	A	
IR28B227	9418C181	5.75	Aroclor 1260	0.07	0.03708	A	
IR28B240	9421R156	3.75	Aroclor 1260	0.05	0.03587	A	
IR28B240	9421R156	3.75	Aroclor 1254	0.3	0.03587	A	
IR28B240	9421R156	3.75	Aroclor 1242	0.5	0.03587	A	
IR28B243	9421R165	3.75	Aroclor 1260	0.2	0.03511	J3	
IR28B243	9421R165	3.75	Aroclor 1248	0.2	0.03511	J3	
IR28B245	9421R168	5.75	Aroclor 1260	0.6	0.03511	J3	
IR28B245	9421R168	5.75	Aroclor 1248	0.08	0.03511	J3	
IR29B072	9424R278	1.75	Aroclor 1260	0.2	0.03474	J3	
IR29B072	9424R279	3.75	Aroclor 1260	0.2	0.03474	A	
IR29B073	9424R275	1.75	Aroclor 1260	0.4	0.03438	A	PCB-9
IR29B073	9424R276	3.75	Aroclor 1260	1.7	0.03438	VJ3	
IR29B073	9424R277	6.25	Aroclor 1260	0.03	0.03587	A	
IR29B074	9424R273	3.75	Aroclor 1260	39	0.03474	J3	PCB-9
IR29B074	9424R274	6.25	Aroclor 1260	0.9	0.06947	A	
IR29B075	9434C488	1.25	Aroclor 1260	1.2	0.034	A	PCB-9
IR29B075	9434C489	3.75	Aroclor 1260	0.2	0.035	A	
IR29B075	9434C490	6.25	Aroclor 1260	0.02	0.035	A	
IR29B080	9425N541RE	1.75	Aroclor 1260	0.03	0.03667	J5	
IR30B035	9424R283	3.75	Aroclor 1260	0.2	0.03511	A	
IR49TA21	9430D004	0	Aroclor 1260	0.3	0.086	A	
IR51B025	9421R192	1.75	Aroclor 1260	1.4	0.037	J3	PCB-10
IR51B026	9421R189	1.25	Aroclor 1260	0.08	0.037	J3	
IR51B031	9424R300	3.25	Aroclor 1260	0.3	0.35	J3	
IR57B026	9419R111	1.75	Aroclor 1260	0.02	0.03474	A	
PA28B049	9310N156	2.25	Aroclor 1260	0.1	0.0397	A	
PA28B063	9310N157	2.25	Aroclor 1260	0.6	0.0366	A	
PA28B063	9310N159	11.25	Aroclor 1260	0.2	0.0434	A	
PA28SS106	9335X009	0	Aroclor 1260	0.2	0.36	A	
PA28SS69	9305X905	0.75	Aroclor 1260	0.03	0.037	VJ3	
PA28SS74	9310J361	0.75	Aroclor 1260	1.2	0.0375	A	PCB-11
PA29B003	9305N105	2.25	Aroclor 1260	0.03	0.035	A	
PA29B017	9304N088	11.75	Aroclor 1260	0.3	0.0358	A	
PA29SS15	9310J372	1.75	Aroclor 1260	0.3	0.0343	A	
PA29SS27	9304X889	0.75	Aroclor 1260	0.4	0.36	V	

Table 2b. PCB Concentrations in Parcel C Soil Samples
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
PA29SS37	9310J362	0	Aroclor 1260	4.6	0.0702	A	PCB-9
PA30SS07	9311N169	0.75	Aroclor 1260	0.04	0.0375	A	
PA49TA02	9307H412	3.75	Aroclor 1260	0.05	0.036	J3	
PA49TA02	9307H412	3.75	Aroclor 1254	0.02	0.036	J3	
PA49TA04	9307H408	2.75	Aroclor 1260	0.02	0.036	J3	
PA51SS08	9309J358	0.75	Aroclor 1260	0.02	0.035	A	
PA51SS10	9310J383	2.75	Aroclor 1260	0.03	0.038	A	
PA51SS11	9309J355	0.75	Aroclor 1260	0.4	0.18	A	
PA51SS12	9309J356	0.75	Aroclor 1260	0.4	0.037	A	
PA51SS13	9309J357	0.75	Aroclor 1260	0.3	0.039	A	
PA51SS14	9310J377	2.25	Aroclor 1260	0.3	0.039	A	
PA51SS15	9309J359	1.25	Aroclor 1260	140	1.9	A	PCB-10
PA51SS16	9309J360	1.25	Aroclor 1260	1.5	0.19	A	PCB-10
PA51SS17	9310J365	0	Aroclor 1254	1.4	0.17	J3	PCB-12
PA51SS18	9310J366	0	Aroclor 1260	0.5	0.035	A	
PA58SS08	9305X915	0	Aroclor 1254	1.5	0.34	VJ3	PCB-13
PA58SS08	9305X915	0	Aroclor 1242	1.2	0.34	VJ3	

* Validation assigned qualifiers:
- A: Based on cursory validation, analytical results for this compound are acceptable without qualification.
- J3: Analytical results for this compound are qualified as estimated due to noncompliance with spike recovery criteria.
- J5: Analytical results for this compound are qualified as estimated due to noncompliance with holding time criteria.
- V: Analytical result received a full CLP validation.

** Corresponds to area designations on Plate 2 and Tables 3 and 4.

Table 2c. PCB Concentrations in Parcel D Soil Samples
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR08B001	8940E066	3.25	Aroclor 1260	0.6	1.9	A	
IR08B004	8941G065	5.75	Aroclor 1260	4.9	0.19	J5	PCB-14
IR08B005	8940G040	9.25	Aroclor 1260	0.1	0.2	VA	
IR08B006	8940G046	3.25	Aroclor 1260	0.03	0.18	A	
IR08B007	8940G026	9.25	Aroclor 1260	1.5	1.9	A	PCB-14
IR08B007A	8941G063	29.75	Aroclor 1260	0.1	0.23	J5	
IR08B008	8940G006	3.25	Aroclor 1260	0.03	0.17	A	
IR08B008	8940G007	6.25	Aroclor 1260	0.1	0.2	A	
IR08B012	8940G029	5.75	Aroclor 1260	0.07	0.32	A	
IR08B013	9016H134	1.75	Aroclor 1260	0.2	0.95	A	
IR08B013	9016H135	3.25	Aroclor 1260	0.1	0.95	A	
IR08B014	9016H152A	1.75	Aroclor 1260	0.10	0.17	A	
IR08B016	9027E125	0.75	Aroclor 1260	3.4	1	A	PCB-14
IR08B016	9027E126	2.25	Aroclor 1260	0.3	0.25	A	
IR08B016A	9017H202	0.75	Aroclor 1260	0.05	0.17	A	
IR08B016A	9017H203	3.25	Aroclor 1260	0.07	0.17	A	
IR08B018	9026L001	1.25	Aroclor 1260	0.06	0.05	A	
IR08B018	9026L003	5.75	Aroclor 1260	0.1	0.05	A	
IR08B018A	9017F032	0.75	Aroclor 1260	1.2	2.9	A	PCB-14
IR08B018A	9017F033	3.25	Aroclor 1260	0.7	1.9	A	
IR08B018A	9017F034	5.75	Aroclor 1260	0.06	0.18	A	
IR08B018A	9017F035	9.75	Aroclor 1260	0.1	0.18	A	
IR08B021	9020G255	1.25	Aroclor 1260	0.1	0.18	A	
IR08B022	9016G212	1.25	Aroclor 1260	0.7	2	A	PCB-14
IR08B022	9016G213	3.25	Aroclor 1260	2.7	4.3	A	
IR08B022	9016G215	8.75	Aroclor 1260	0.5	0.97	A	
IR08B024	9017H180	3.25	Aroclor 1260	0.08	0.17	A	
IR08B027	9026G289	1.25	Aroclor 1260	0.06	0.05	A	
IR08B027A	9017F038A	1.25	Aroclor 1260	0.5	2.8	A	
IR08B031	9027F049	1.25	Aroclor 1260	0.2	0.05	A	
IR08B032	9019G241	1.25	Aroclor 1260	0.1	0.18	A	
IR08B032	9019G242	3.25	Aroclor 1260	0.6	0.88	A	
IR08B032	9019G244	11.75	Aroclor 1260	0.1	0.2	A	
IR08B035	9015H113	1.75	Aroclor 1260	0.4	1.7	A	
IR08MW38A	9027E114	3.25	Aroclor 1260	0.4	0.15	A	
IR08MW38A	9027E123	2.25	Aroclor 1260	0.2	0.15	A	
IR08MW42A	9137M161	6.25	Aroclor 1260	0.2	0.9	A	PCB-14
IR08MW42A	9137M162	11.25	Aroclor 1260	0.08	0.19	A	
IR08MW42A	9137M163	16.25	Aroclor 1260	7.2	1.9	A	
IR08MW42A	9137M164	18.75	Aroclor 1260	2.8	1.9	A	
IR22B012	9319A954	1.75	Aroclor 1254	0.03	0.035	A	
IR22B012	9319A956	6.75	Aroclor 1254	0.02	0.038	A	
IR22SS25	9433C476	0.25	Aroclor 1260	0.02	0.035	V	
IR22WS24	9433C475	0	Aroclor 1260	0.001	0.0005	A	
IR35SS14	9433C478	0.25	Aroclor 1260	0.5	0.17	J3	
IR35SS15	9433C479	0.25	Aroclor 1260	0.3	0.17	J3	

Table 2c. PCB Concentrations in Parcel D Soil Samples
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR36B038	9434R571	1.25	Aroclor 1260	0.2	0.18	A	
IR36B038	9434R573	6.25	Aroclor 1260	0.2	0.17	A	
IR36B040	9417N539	16.25	Aroclor 1254	0.3	0.39	A	
IR36B042	9418L387	1.75	Aroclor 1260	0.02	0.03708	A	
IR36B045	9418L396	1.25	Aroclor 1260	0.02	0.03667	J5	
IR36B049	9422T160	1.25	Aroclor 1260	0.2	0.071	A	
IR36B050	9415L314	1.25	Aroclor 1260	0.1	0.17	A	
IR36B059	9422T176	1.25	Aroclor 1260	0.2	0.03474	J5	
IR36B062	9423T203	1.25	Aroclor 1260	0.009	0.03438	A	
IR36B064	9422T196	1.25	Aroclor 1254	0.8	0.36	A	
IR36B069	9424T266	1.75	Aroclor 1242	0.04	0.03438	V	
IR36B081	9415L295	1.25	Aroclor 1260	0.6	0.03438	V	
IR36B094	9424A889	1.25	Aroclor 1260	0.7	0.03511	J3	
IR36B102	9424A911	11.25	Aroclor 1248	0.02	0.038	A	
IR36B105	9424T300	0.75	Aroclor 1260	1.1	0.17	A	PCB-15
IR36B106	9425C305	21.25	Aroclor 1260	0.03	0.03976	J5	
IR36B108	9425C284	1.25	Aroclor 1260	0.5	0.06947	J5	
IR36B110	9425C312	1.25	Aroclor 1260	0.6	0.68	J3	
IR37B010	9421C246	5.25	Aroclor 1260	0.04	0.039	A	
IR37B013	9421R180	1.25	Aroclor 1260	0.02	0.03708	A	
IR37B013	9421R180	1.25	Aroclor 1242	0.02	0.03708	A	
IR37B013	9421R181	5.25	Aroclor 1260	0.02	0.03793	A	
IR37B017	9424C268	0.75	Aroclor 1260	0.5	0.06947	A	
IR39B010	9420A840	1.25	Aroclor 1260	0.2	0.03511	J3	
IR39B010	9420A841	6.25	Aroclor 1260	0.07	0.0375	A	
IR39B017	9420R138	6.25	Aroclor 1260	0.3	0.07416	A	
IR39B017	9420R138	6.25	Aroclor 1254	0.2	0.07416	A	
IR39B017	9420R140	11.25	Aroclor 1260	0.1	0.075	A	
IR39B017	9420R140	11.25	Aroclor 1254	0.05	0.075	A	
IR39B022	9422R202	1.75	Aroclor 1260	0.2	0.073	A	
IR39B024A	9426R335	1.75	Aroclor 1260	0.3	0.06875	A	
IR39B028	9435R633	31.25	Aroclor 1260	0.2	0.037	A	
IR45TA20	9437A059RE	4.75	Aroclor 1260	0.02	0.038	J5	
IR45TA20	9437A059RE	4.75	Aroclor 1254	0.02	0.038	J5	
IR50B016	9422R211	6.25	Aroclor 1260	0.04	0.0375	A	
IR50B020	9421R185	2.25	Aroclor 1260	0.02	0.035	J3	
IR51B032	9427R395	1.75	Aroclor 1260	0.2	0.034	A	
IR53B014	9421L498	1.25	Aroclor 1260	0.2	0.03667	J3	
IR55B019	9420L465	0.75	Aroclor 1260	0.1	0.03587	A	
IR55B020	9421L479	0.75	Aroclor 1260	0.09	0.03438	J3	
IR55B021	9421L486	6.25	Aroclor 1254	0.04	0.03438	A	
IR55B022	9424T292	3.75	Aroclor 1260	0.03	0.03511	J5	
IR55B023	9424T297	0.75	Aroclor 1254	0.5	0.03511	VJ5	
IR55B024	9424T288	1.25	Aroclor 1260	0.05	0.06947	A	
IR55B025	9424T295	3.75	Aroclor 1260	0.02	0.03548	J5	
PA33B053	9311N177	9.75	Aroclor 1254	0.7	0.0379	J3	

Table 2c. PCB Concentrations in Parcel D Soil Samples
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
PA33B060	9309A685	10.25	Aroclor 1260	0.09	0.037	A	
PA33SS11	9308A620	0	Aroclor 1260	0.04	0.06	J3	
PA34B011	9309A681	6.75	Aroclor 1260	0.01	0.036	A	
PA34SS14	9312A696	1.25	Aroclor 1260	0.1	0.037	A	
PA35B005	9309A667	1.75	Aroclor 1260	0.07	0.037	A	
PA35B008	9309A671	1.75	Aroclor 1254	0.004	0.035	A	
PA35SS03	9307A609	1.25	Aroclor 1260	0.04	0.038	A	
PA35SS06	9307A595	0.75	Aroclor 1260	1.0	0.034	A	
PA36B022	9309A657	1.75	Aroclor 1260	0.2	0.0717	A	
PA36MW03A	9306A534	1.75	Aroclor 1260	0.02	0.036	J3	
PA36MW04A	9305N130	8.75	Aroclor 1260	0.02	0.036	VJ3	
PA36MW08A	9306A580	11.75	Aroclor 1260	0.02	0.036	J3	
PA37SS09	9310J369	0.75	Aroclor 1260	0.3	0.379	J3	
PA39B004	9309A663	1.75	Aroclor 1260	0.1	0.0402	A	
PA39B005	9309A675	1.75	Aroclor 1260	0.1	0.0379	J3	
PA39MW02A	9307J273	2.25	Aroclor 1260	0.07	0.0392	A	
PA45TA06	9322G733	5.25	Aroclor 1260	0.09	0.036	A	
PA45TA11	9322P224	2.75	Aroclor 1260	0.2	0.035	A	
PA45TA12	9325A059	4.25	Aroclor 1260	0.03	0.039	A	
PA48TA01	9311A696	3	Aroclor 1260	0.05	0.039	A	
PA51SS19	9310J396	1.75	Aroclor 1260	0.04	0.037	A	
PA53SS09	9310J367	1.25	Aroclor 1260	0.3	0.0694	J3	
PA53SS09	9310J367	1.25	Aroclor 1248	0.2	0.0694	J3	
PA55B013	9319G723	0	Aroclor 1260	0.02	0.035	J3	

* Validation assigned qualifiers:
- A: Based on cursory validation, analytical results for this compound are acceptable without qualification.
- J3: Analytical results for this compound are qualified as estimated due to noncompliance with spike recovery criteria.
- J5: Analytical results for this compound are qualified as estimated due to noncompliance with holding time criteria.
- V: Analytical result received a full CLP validation.

** Corresponds to area designations on Plate 3 and Tables 3 and 4.

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR01B004	9114H673	8.5	Aroclor 1260	24	10	A	PCB-16
IR01B004	9114H673	8.5	Aroclor 1016	130	20	A	
IR01B004	9114H677	31	Aroclor 1016	0.2	0.098	A	
IR01B006	9219A152	6.25	Aroclor 1260	0.7	0.367	A	PCB-16
IR01B006	9219A153	8.75	Aroclor 1260	5.5	0.565	J7	
IR01B006	9219A156	21.25	Aroclor 1260	2.4	0.428	A	
IR01B011	9219A163	8.75	Aroclor 1260	1.5	0.358	A	PCB-16
IR01B011	9219A164	11.25	Aroclor 1260	3.8	0.395	A	
IR01B011	9219A165	16.25	Aroclor 1260	1.0	0.472	A	
IR01B011	9219A165	16.25	Aroclor 1242	9.3	0.236	A	
IR01B011	9219A166	21.25	Aroclor 1260	2.0	0.442	A	
IR01B011	9219A166	21.25	Aroclor 1242	43	0.221	A	
IR01B012	9220A214	16.25	Aroclor 1260	26	3.856	A	PCB-16
IR01B012	9220A214	16.25	Aroclor 1242	78	1.928	A	
IR01B013	9219A172	8.75	Aroclor 1260	5.9	0.374	A	PCB-16
IR01B013	9219A173	11.25	Aroclor 1260	1.3	0.334	J5	
IR01B013	9219A174	21.25	Aroclor 1260	0.6	0.383	A	
IR01B013	9219A174	21.25	Aroclor 1242	2.6	0.191	A	
IR01B015	9219A178	8.75	Aroclor 1260	0.6	0.365	J5	
IR01B018G	9218H114	1.25	Aroclor 1242	0.02	0.087	A	PCB-16
IR01B018G	9218H115	3.75	Aroclor 1260	0.2	0.18	A	
IR01B018G	9218H115	3.75	Aroclor 1254	0.1	0.18	A	
IR01B018G	9218H115	3.75	Aroclor 1242	0.04	0.088	A	
IR01B018G	9218H116	6.25	Aroclor 1254	2.1	9.2	A	
IR01B018G	9218H116	6.25	Aroclor 1242	7.2	4.6	A	
IR01B018G	9218H117	8.75	Aroclor 1260	1.8	1.7	A	
IR01B018G	9218H117	8.75	Aroclor 1242	1.5	0.87	A	
IR01B019	9219A186	8.25	Aroclor 1260	0.7	0.412	A	PCB-16
IR01B019	9219A187	11.25	Aroclor 1242	37	0.293	J5	
IR01B019	9219A188	16.25	Aroclor 1242	32000	220	A	
IR01B021A	9219H131	3.75	Aroclor 1260	0.1	0.19	A	
IR01B024	9219A192	6.25	Aroclor 1260	3.4	1.7	A	PCB-16
IR01B024	9219A193	8.75	Aroclor 1260	1.6	1.9	A	
IR01B024	9219A193	8.75	Aroclor 1242	0.9	0.94	A	
IR01B024	9219A194	11.25	Aroclor 1260	7.3	14	A	
IR01B024	9219A195	16.25	Aroclor 1260	3.2	10	A	
IR01B024	9219A195	16.25	Aroclor 1242	13	5	A	
IR01B024	9219A196	26.25	Aroclor 1260	0.06	0.26	A	
IR01B024	9219A196	26.25	Aroclor 1242	0.09	0.13	A	

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR01B029	9219A198	3.75	Aroclor 1254	1.2	1.9	A	PCB-16
IR01B029	9219A199	6.25	Aroclor 1260	0.9	2.0	A	
IR01B029	9219A200	8.75	Aroclor 1260	0.7	2.0	J7	
IR01B045	9220A203	1.25	Aroclor 1260	115	3.362	A	PCB-16
IR01B045	9220A204	3.75	Aroclor 1260	17	0.38	A	
IR01B275	9226A373	2.75	Aroclor 1260	5.9	0.006	A	PCB-16
IR01B275	9226A375	8.75	Aroclor 1260	0.5	0.006	A	
IR01B275	9226A375	8.75	Aroclor 1016	0.2	0.003	A	
IR01B275	9226A376	11.25	Aroclor 1260	1.9	0.006	A	
IR01MW03A	9117H725	6	Aroclor 1016	13	4.7	J3	PCB-16
IR01MW05A	9217H110	6.25	Aroclor 1260	8.6	9.3	A	PCB-16
IR01MW05A	9217H110	6.25	Aroclor 1254	7.1	9.3	A	
IR01MW05A	9217H111	8.75	Aroclor 1260	370	840	A	
IR01MW05A	9218H113	27.25	Aroclor 1260	0.9	2.3	A	
IR01MW05A	9218H113	27.25	Aroclor 1242	1.1	1.1	A	
IR01MW16A	9218A137	6.25	Aroclor 1260	0.4	0.87	A	PCB-16
IR01MW16A	9218A138	8.75	Aroclor 1016	740	460	A	
IR01MW16A	9218A139	11.25	Aroclor 1016	250	87	A	
IR01MW16A	9218A141	26.75	Aroclor 1254	0.03	0.22	A	
IR01MW16A	9218A141	26.75	Aroclor 1242	0.04	0.11	A	
IR01MW17B	9204H079	11.25	Aroclor 1242	2500	0	A	PCB-16
IR01MW18A	9218H120	11.25	Aroclor 1260	0.3	0.88	A	PCB-16
IR01MW18A	9218H120	11.25	Aroclor 1254	1.2	0.88	A	
IR01MW18A	9218H120	11.25	Aroclor 1242	1.0	0.44	A	
IR01MW18A	9218H121	21.25	Aroclor 1260	0.02	0.19	A	
IR01MW18A	9218H121	21.25	Aroclor 1242	0.05	0.095	A	
IR01MW18A	9218H122	26.25	Aroclor 1260	0.02	0.19	A	
IR01MW18A	9218H122	26.25	Aroclor 1242	0.05	0.095	A	
IR01MW18A	9218H123	31.25	Aroclor 1260	0.05	0.24	J7	
IR01MW31A	9218A144	6.25	Aroclor 1260	0.1	0.19	A	PCB-16
IR01MW31A	9218A145	8.75	Aroclor 1260	2.3	1.8	A	
IR01MW43A	9110F091	1.25	Aroclor 1260	20	37	A	PCB-16
IR01MW43A	9110F092	3.75	Aroclor 1260	8.2	3.6	A	
IR01MW43A	9110F096	16.25	Aroclor 1260	1.6	3.7	A	
IR01MW43A	9110F097	22.75	Aroclor 1260	0.5	1.3	A	
IR01MW43A	9110F098	26.25	Aroclor 1260	0.1	0.15	A	
IR01MW44A	9110F099	1.25	Aroclor 1260	4.9	1.8	A	PCB-16
IR01MW44A	9110F100	4.25	Aroclor 1260	2.6	0.89	A	
IR01MW44A	9110F101	6.25	Aroclor 1260	0.9	1.8	A	
IR01MW44A	9110F102	8.25	Aroclor 1260	0.6	1.3	A	
IR01MW44A	9110F103	11.25	Aroclor 1260	8.6	2.1	A	

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR01MW44A	9110F104	16.25	Aroclor 1260	0.4	1.4	A	
IR01MW47B	9203H056	0.75	Aroclor 1260	0.7	0.354	A	
IR01MW47B	9203H062	26.25	Aroclor 1260	0.8	0.495	A	
IR01MW58A	9110H618	6.25	Aroclor 1260	0.4	0.22	A	
IR01MW58A	9110H619	8.75	Aroclor 1260	0.6	0.2	A	
IR01SS349	9227X657	0.5	Aroclor 1260	3.6	0.006	A	PCB-17
IR01SS350	9227J144	0.5	Aroclor 1260	1.4	4.2	A	PCB-18
IR01TA02B	9122M041	3.5	Aroclor 1260	0.2	0.87	A	
IR01TA04A	9122M040	2	Aroclor 1260	0.8	1.8	J3	
IR01TA05A	9122M034	2	Aroclor 1260	0.4	0.89	A	
IR01TA07A	9122M036	3	Aroclor 1260	75	180	A	PCB-18
IR01TA07B	9122M037	2.5	Aroclor 1260	150	170	A	PCB-18
IR01TA08B	9122M038	1.2	Aroclor 1260	1.4	17	A	PCB-18
IR02B098	9150H013	13.75	Aroclor 1260	1.7	0	A	PCB-19
IR02B098D	9150H011	3.75	Aroclor 1260	3.0	0	A	PCB-19
IR02B098D	9150H012	6.25	Aroclor 1260	0.6	0	A	
IR02B100	9111H645	1.12	Aroclor 1260	32	8.9	J3	PCB-20
IR02B100	9111H646	3.62	Aroclor 1260	0.06	0.19	A	
IR02B112	9148A028	1.25	Aroclor 1260	0.9	0.011	A	
IR02B122	9150H955	1.25	Aroclor 1260	12	19	A	PCB-19
IR02B122	9150H956	3.75	Aroclor 1254	2.2	1.9	A	
IR02B122	9150H957	6.25	Aroclor 1260	0.4	0.91	A	
IR02B122	9150H958	8.75	Aroclor 1260	8.3	4.3	A	
IR02B122	9150H959	11.25	Aroclor 1260	1.0	1.8	A	
IR02B135	9149H948	1.25	Aroclor 1260	0.06	0.17	A	PCB-19
IR02B135	9149H949	3.75	Aroclor 1260	1.8	1.8	A	
IR02B150	9149H944	1.25	Aroclor 1260	0.05	0.18	A	
IR02B249	9202N013	1.25	Aroclor 1260	2.1	2.628	A	PCB-19
IR02B249	9202N014	3.75	Aroclor 1260	21	2.454	A	
IR02B249	9202N015	6.25	Aroclor 1260	0.5	0.372	A	
IR02B250	9151A044	3.75	Aroclor 1260	0.8	0.36	A	
IR02B256	9151H016	3.75	Aroclor 1260	0.5	0	A	
IR02B288	9226H338	1.25	Aroclor 1260	1.2	0.011	A	PCB-19
IR02B288	9226H339	3.25	Aroclor 1260	3.8	0.011	J3	
IR02B288	9226H340	6.25	Aroclor 1260	0.8	0.011	A	
IR02B288	9226H341	8.75	Aroclor 1260	3.7	0.012	A	
IR02B288	9226H342	11.25	Aroclor 1260	0.9	0.014	A	
IR02B290	9225A303	3.25	Aroclor 1260	0.4	0.011	A	
IR02B294	9226A341	1.75	Aroclor 1260	0.5	0.94	A	
IR02B294	9226A346	16.25	Aroclor 1260	0.05	0.2	A	

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR02B295	9226A353	8.75	Aroclor 1260	0.07	0.19	A	
IR02B295	9226A354	11.25	Aroclor 1260	0.2	0.95	J7	
IR02B359	9227A380	3.75	Aroclor 1254	0.7	1.7	A	PCB-21
IR02B359	9227A380	3.75	Aroclor 1248	0.9	0.87	J7	
IR02B359	9227A382	8.75	Aroclor 1260	1.0	1.8	A	
IR02B369A	9331A065	1.25	Aroclor 1260	0.1	0.035	A	
IR02B369A	9331A067	10.75	Aroclor 1260	0.1	0.034	A	
IR02B370	9331A069	1.25	Aroclor 1260	1.1	0.35	A	PCB-21
IR02B370	9331A070	6.25	Aroclor 1260	0.3	0.035	A	
IR02MW127B	9202H046	1.25	Aroclor 1260	6.4	5.068	J5	PCB-19
IR02MW127B	9202H047	2.75	Aroclor 1260	490	530	J5	
IR02MW127B	9202H049	11.25	Aroclor 1260	0.8	0.473	J5	
IR02MW141A	9219H124	1.25	Aroclor 1260	2.7	0.35	J3	PCB-19
IR02MW141A	9219H125	3.75	Aroclor 1260	1.4	0.343	A	
IR02MW141A	9219H127	8.75	Aroclor 1260	0.5	0.36	A	
IR02MW173A	9202H038	1.25	Aroclor 1260	1.5	2.84	A	PCB-19
IR02MW173A	9202H041	8.75	Aroclor 1260	0.6	0.35	A	
IR02MW173A	9202H042	16.25	Aroclor 1260	0.9	0.39	A	
IR02MW298A	9224H271	6.25	Aroclor 1260	0.6	7.5	A	
IR02SS303	9227X648	0.5	Aroclor 1260	0.4	0.007	A	
IR02SS304	9227X649	0.5	Aroclor 1260	1.3	0.007	A	PCB-19
IR02SS305	9227X656	0.5	Aroclor 1260	1.9	0.007	A	PCB-19
IR02SS306	9227X655	0.5	Aroclor 1260	2.3	0.007	A	PCB-19
IR02SS307	9227X653	0.5	Aroclor 1260	4.8	0.007	J3	PCB-19
IR02SS308	9227X650	0.5	Aroclor 1260	2.7	0.007	A	PCB-19
IR02SS310	9227X651	0.5	Aroclor 1260	1.5	0.007	A	PCB-19
IR02SS311	9227X652	0.5	Aroclor 1260	1.8	0.007	A	PCB-19
IR02SS312	9227X654	0.5	Aroclor 1260	1.3	0.007	A	PCB-19
IR02SS316	9227J122	0.5	Aroclor 1260	0.3	0.82	A	
IR02SS319	9227J125	0.5	Aroclor 1260	0.04	0.16	A	
IR02SS320	9227J126	0.5	Aroclor 1260	45	81	A	PCB-19
IR02SS321	9227J127	0.5	Aroclor 1260	4.6	16	A	PCB-19
IR02SS363	9227X647	0.5	Aroclor 1260	0.2	0.007	A	
IR02TA10A	9124M048	3	Aroclor 1260	15	1.9	J3	PCB-19
IR02TA11A	9122M039	1.75	Aroclor 1260	1.3	23	A	PCB-19
IR02TA14B	9128G627	4.75	Aroclor 1260	0.3	0.18	A	
IR02TA15A	9125M051	3.25	Aroclor 1260	13	9.0	A	PCB-19
IR02TA16A	9124M050	2.25	Aroclor 1260	0.6	0.91	J3	
IR02TA17B	9125M052	3.25	Aroclor 1260	15	9.4	A	PCB-19
IR02TA18A	9125M053	1.85	Aroclor 1260	0.7	1.8	A	
IR02TA25B	9125M056	6.55	Aroclor 1260	0.8	0.96	A	

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR02TA30B	9123M048	6.25	Aroclor 1260	3.9	1.9	A	PCB-21
IR02TA32B	9125M057	0.5	Aroclor 1260	0.2	0.16	A	
IR02TA35A	9128M075	4.75	Aroclor 1260	0.3	0.98	A	
IR02TA40A	9126M064	2.75	Aroclor 1260	0.8	0.9	A	
IR02TA43A	9123M044	5	Aroclor 1260	0.6	1.8	A	
IR02TA55B	9123G611	6.75	Aroclor 1260	0.2	0.2	A	
IR02TA55B	9123G611	6.75	Aroclor 1254	0.1	0.2	A	
IR02TA61B	9126M070	1.25	Aroclor 1260	1.0	1.8	A	PCB-19
IR03B338	9226N034	11.25	Aroclor 1260	1.1	0.171	J3	PCB-22
IR03B340	9226A334	8.75	Aroclor 1260	0.03	0.17	A	
IR03B341	9224H278	3.25	Aroclor 1260	0.9	0.012	A	
IR03B341	9224H280	8.75	Aroclor 1260	0.6	0.012	A	
IR03MW224A	9201N001	1.25	Aroclor 1260	3.1	0.198	J5	PCB-22
IR03MW225A	9151A055	1.25	Aroclor 1260	12	8.8	A	PCB-22
IR03MW225A	9151A056	3.75	Aroclor 1260	0.7	0.84	A	
IR03MW225A	9151A057	6.25	Aroclor 1260	0.2	0.18	A	
IR03MW225A	9151A058	8.75	Aroclor 1260	0.4	0.19	A	
IR03MW225A	9151A059	11.25	Aroclor 1260	0.3	0.18	A	
IR03MW225A	9151A060	16.25	Aroclor 1260	0.4	0.19	A	
IR03MW226A	9151A062	1.25	Aroclor 1260	1.4	0.83	A	PCB-22
IR03MW226A	9151A063	3.75	Aroclor 1260	1.2	0.92	A	
IR03MW226A	9151A064	6.25	Aroclor 1260	0.4	0.18	A	
IR03MW226A	9151A065	8.25	Aroclor 1260	0.6	0.19	A	
IR03MW226A	9151A066	11.25	Aroclor 1260	0.3	0.18	A	
IR03MW226A	9151A067	16.25	Aroclor 1260	2.0	1.9	A	
IR03MW226A	9151A068	20.25	Aroclor 1260	0.3	1.3	A	
IR03MW342A	9227A373	3.75	Aroclor 1260	0.7	1.8	J7	
IR03TA48B	9121M023	5.5	Aroclor 1260	1.7	21	A	PCB-22
IR03TA49A	9121M022	5.5	Aroclor 1260	0.4	0.95	A	
IR03TA50A	9121M024	3.5	Aroclor 1260	4.2	21	A	PCB-22
IR03TA51B	9121M021	4.5	Aroclor 1260	0.9	0.88	A	
IR03TA52C	9121M020	2	Aroclor 1260	0.3	0.84	A	
IR03TA52E	9121M031	6	Aroclor 1260	0.9	2	A	
IR03TA53F	9121M030	6	Aroclor 1260	10	18	A	PCB-22
IR04B002	9142H884	1.25	Aroclor 1260	0.1	0.89	VA	
IR04B004	9143M260	1.75	Aroclor 1260	0.2	0.17	A	
IR04B007	9142M211	1.75	Aroclor 1260	0.2	0.82	J3	
IR04B007	9142M212	3.75	Aroclor 1260	0.05	0.16	A	
IR04B011	9142H898	1.75	Aroclor 1260	1.4	1.7	A	PCB-18
IR04B012	9142M219	1.75	Aroclor 1260	1.4	1.7	A	PCB-18
IR04B015	9143M295	1.25	Aroclor 1260	14	1.684	A	PCB-18

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR04B016	9143M278	1.75	Aroclor 1260	0.3	0.174	A	PCB-18
IR04B016	9143M280	6.25	Aroclor 1260	1.5	0.176	A	
IR04B017	9143M270	1.75	Aroclor 1260	2.8	0.167	A	PCB-18
IR04B019	9224A276	1.25	Aroclor 1260	12	0.17	A	PCB-18
IR04B019	9224A277	3.25	Aroclor 1260	1.5	0.168	A	
IR04B020	9224A273	3.75	Aroclor 1260	0.7	0.172	A	
IR04B025	9224H259	1.75	Aroclor 1260	1.0	0.171	A	PCB-18
IR04B025	9224H260	3.75	Aroclor 1260	3.4	0.171	J3	
IR04B025	9224H261	6.25	Aroclor 1260	1.0	0.18	A	
IR04B025	9224H262	11.25	Aroclor 1260	0.4	0.18	A	
IR04B028	9224A279	1.25	Aroclor 1260	3.7	0.168	A	PCB-18
IR04B030	9225A289	1.25	Aroclor 1260	8.9	0.171	A	PCB-18
IR04B030	9225A290	2.75	Aroclor 1260	0.4	0.173	A	
IR04B032	9225H285	1.75	Aroclor 1260	3.3	0.169	VA	PCB-18
IR04B034	9225H289	1.75	Aroclor 1260	1.1	0.183	A	PCB-18
IR04B034	9225H292	11.25	Aroclor 1260	0.4	0.184	A	
IR04B041	9225H293	1.75	Aroclor 1260	0.3	0.149	A	
IR04B044	9225H302	3.25	Aroclor 1260	0.2	0.167	A	
IR04B047	9224A282	1.25	Aroclor 1260	2.6	0.168	VA	PCB-18
IR04MW13A	9143M286	1.75	Aroclor 1260	25	1.702	A	PCB-18
IR05B044	9144M351	1.75	Aroclor 1260	0.2	0.168	A	
IR05B045	9144M323	3.75	Aroclor 1260	0.3	0.18	A	
IR05B049	9144M330	1.25	Aroclor 1260	1.0	1.7	VA	PCB-23
IR05B049	9144M331	2.75	Aroclor 1260	0.2	0.17	A	
IR05B050	9148M423	1.75	Aroclor 1260	0.06	0.17	A	
IR05B052	9143M314	1.75	Aroclor 1260	0.2	0.167	A	
IR05B056	9145M364	3.75	Aroclor 1260	0.06	0.18	A	
IR05B056	9145M365	11.25	Aroclor 1260	0.1	0.19	A	
IR05B064	9224H246	1.25	Aroclor 1260	1.0	0.172	A	PCB-23
IR05B068	9145M378	3.25	Aroclor 1260	0.2	0.89	A	
IR05B068	9145M379	5.25	Aroclor 1260	0.10	0.18	A	
IR05B087	9224H250	1.25	Aroclor 1260	4.8	0.166	J3	PCB-24
IR05B087	9224H252	6.25	Aroclor 1260	0.3	0.179	A	
IR11SS21	8902A173	0.5	Arochlor 1254	3.3	0.18	J3	PCB-25
IR11SS21	8902A174	2	Arochlor 1254	0.5	0.18	A	
IR11SS22	8902A172	0.5	Arochlor 1254	0.4	0.18	A	
IR11SS23	8905A216	0.5	Arochlor 1254	38	1.8	A	PCB-25
IR11SS23	8905A217	1.5	Arochlor 1254	30	2.0	A	
IR12B010	9234A446	1.25	Aroclor 1260	0.1	0.83	A	
IR12MW12A	9131H766	3.75	Aroclor 1260	0.4	0.89	A	
IR12MW12A	9131H767	6.25	Aroclor 1260	0.4	0.87	A	

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
IR12MW17A	9233A420	1.25	Aroclor 1260	3.9	8.2	A	PCB-17
IR12MW17A	9233A421	6.25	Aroclor 1260	1.6	3.6	A	
IR12MW17A	9233A422	8.75	Aroclor 1260	0.2	0.18	J7	
IR12MW17A	9233A423	11.25	Aroclor 1260	1.0	1.8	A	
IR12MW17A	9233A424	16.25	Aroclor 1260	0.09	0.19	A	
IR12MW17A	9233A425	21.25	Aroclor 1260	0.2	0.18	A	
IR12MW18A	9233A426	1.25	Aroclor 1260	0.7	0.84	A	
IR12MW18A	9233A426	1.25	Aroclor 1254	0.6	0.84	A	
IR12MW18A	9233A428	6.25	Aroclor 1260	0.4	0.86	A	
IR12MW18A	9233A429	8.75	Aroclor 1260	0.09	0.18	A	
IR12MW18A	9233A430	11.25	Aroclor 1260	0.06	0.17	A	
IR12MW19A	9233A432	1.25	Aroclor 1260	0.4	0.85	A	
IR12SS13	9129X128	0	Aroclor 1260	1.6	1.7	A	PCB-17
IR12SS17	9129X130	0	Aroclor 1260	5.3	8.4	A	PCB-17
IR12SS17	9129X130	0	Aroclor 1254	1.6	8.4	A	
IR12SS18	9129X142	0	Aroclor 1254	0.7	1.6	A	
IR12SS19	9129X131	0	Aroclor 1260	1.9	1.6	A	PCB-17
IR12SS19	9129X131	0	Aroclor 1254	0.5	1.6	A	
IR12TA08	9231H381	1.75	Aroclor 1260	0.1	0.17	A	PCB-17
IR12TA08	9231H382	2.75	Aroclor 1260	10	43	A	
IR12TA08	9231H382	2.75	Aroclor 1254	33	43	A	
IR12TA08	9231H383	8.75	Aroclor 1254	1.8	1.9	A	
IR12TA09	9231H385	2.25	Aroclor 1260	0.1	0.16	A	
IR12TA09	9231H386	1.75	Aroclor 1260	0.3	0.83	V	
IR12TA10	9231D001	2.25	Aroclor 1260	1.2	1.9	A	PCB-17
IR12TA10	9231D002	2.75	Aroclor 1260	1.0	1.7	A	
IR13B003B	9129N336	1.75	Aroclor 1260	1.8	1.7	A	PCB-26
IR13B007	9128N323	2.25	Aroclor 1260	7.5	1.8	A	PCB-27
IR13MW11A	9128P126	2.75	Aroclor 1260	0.2	0.18	A	
IR14B001	9144D001	1.75	Aroclor 1260	0.2	0.18	A	
IR14B009	9145P148	1.75	Aroclor 1260	1.6	0.344	A	PCB-28
IR14SS02	9129X135	0	Aroclor 1260	1.5	1.6	A	PCB-28
IR14SS04	9129X139	0	Aroclor 1260	0.1	0.16	A	
IR14SS05	9129X132	0	Aroclor 1260	2.8	8.2	A	PCB-28
IR14SS05	9129X132	0	Aroclor 1254	3.4	8.2	A	
IR14SS09	9129X133	0	Aroclor 1260	1.1	1.6	A	PCB-28
IR52B006	9443A177	2.25	Aroclor 1260	0.03	0.035	A	
IR52B007	9443A184	8.25	Aroclor 1260	0.02	0.037	A	
IR52B008	9433Y012	6.25	Aroclor 1260	0.03	0.035	V	
IR52B009	9433Y014	2.25	Aroclor 1254	0.009	0.038	A	
IR56B006	9425R330	3.75	Aroclor 1260	0.03	0.03587	A	

Table 2d. PCB Concentrations in Parcel E
Hunters Point Annex
San Francisco, California

Station	Sample No.	Depth (ft. bgs)	PCB Compound	Value (mg/kg)	Detection Limit (mg/kg)	Qual.*	PCB Area**
PA45TA07	9322G734	4.25	Aroclor 1260	0.1	0.035	V	
PA45TA19	9330H500	3.75	Aroclor 1254	0.1	0.035	A	
PA47TA04	9313D095	2.25	Aroclor 1260	0.1	0.041	V	
PA50TA13	9327P230	6.25	Aroclor 1260	0.06	0.036	A	
PA52SS01	9312X937	0.75	Aroclor 1260	0.2	0.037	A	
PA52SS06	9312X942	0.75	Aroclor 1260	0.06	0.0362	A	
PA54SS01	9309J352	0	Aroclor 1260	0.02	0.037	J3	

* Validation assigned qualifiers:
A: Based on cursory validation, analytical results for this compound are acceptable without qualification.
J3: Analytical results for this compound are qualified as estimated due to noncompliance with spike recovery criteria.
J5: Analytical results for this compound are qualified as estimated due to noncompliance with holding time criteria.
J7: Analytical results for this compound are qualified as estimated due to noncompliance with initial calibration and/or continuing calibration criteria.
V: Analytical result received a full CLP validation.

** Corresponds to area designations on Plate 4 and Tables 3 and 4.

Table 3. Areas Considered for Removal Action Based on PCB Concentrations
Hunters Point Annex
San Francisco, California

Parcel	PCB Area	Site	Sampling Location	Results (mg/kg)	Depth (ft bgs)	Comments	Recommendations
B	PCB-1	IR-06	B031 B039	150 4.9	0.75 5.75	Tank Farm, investigated in 1989	Not appropriate for exploratory excavation; see OU II Feasibility Study for comparison of soil remedial alternatives
	PCB-29	IR-18	B028 B029	3.4 12	1.25 1.25	Industrial debris zone; located offsite	Not suitable for exploratory excavation
	PCB-2	IR-20	B010	3.1	16.25	PCBs in 16.25-foot sample only	No further action, based on depth of exceedance
	PCB-3	IR-25	B013	2.4	1.25	Boring and surface soil sample near solvent sumps; complex problem involving soil and groundwater	Not appropriate for exploratory excavation
	PCB-4	IR-46 PA-24	B017 B004	26 1.4	1.75 2.25	Associated with fuel line; lateral extent not well defined	Fuel line removal and immunoassay for concurrent characterization/soil removal
	PCB-5	PA-25	SS04	3.8	0.75	Associated with utility vault; lateral extent not well defined	Exploratory excavation with prior and concurrent field screening for PCBs and PAHs
	PCB-6	PA-26	SS02	1.5	0.25	Composite sample, also exceeds PRGs for lead and benzo(a)pyrene; lateral extent defined by Plan 2 borings and stains	Exploratory excavation with concurrent immunoassay

Table 3. Areas Considered for Removal Action Based on PCB Concentrations
Hunters Point Annex
San Francisco, California

Parcel	PCB Area	Site	Sampling Location	Results (mg/kg)	Depth (ft bgs)	Comments	Recommendations
B (cont.)	PCB-7	PA-46	TA10	1.5	2.25	Trenches along fuel line; lead and petroleum hydrocarbons associated with PCBs	Removal of fuel line and petroleum hydrocarbons in soil, with concurrent immunoassay
		PA-46	TA11	1.9	2.25		
	PCB-8	PA-51	SS02	15	0.75	Lateral extent defined by Plan 2 borings and visual evidence (staining)	Exploratory excavation recommended in Parcel B SI Report; concurrent immunoassay
C	PCB-9	PA-29	SS37	4.6	0	Not well defined; soils with PAHs and lead exceeding PRGs occur in the area and extend beyond the area of PCB contamination in at least one area	Exploratory excavation recommended in Parcel C SI Report; concurrent immunoassay
		IR-29	B073	1.7	3.75		
		IR-29	B074	39	3.75		
		IR-29	B075	1.2	1.25		
	PCB-10	PA-51	SS15	140	1.25	Lateral extent defined to north and west; proposed borings SA101B001, -B002, -B003, and -B004, and test pits SA101TA05 and -TA06 could be used to define eastern extent of PCBs	Exploratory excavation recommended in Parcel C SI Report; concurrent immunoassay
		PA-51	SS16	1.5	1.25		
		IR-51	B025	1.4	1.75		
	PCB-11	PA-28	SS74	1.2	0.75	Lateral extent defined by Plan 2 borings	Exploratory excavation with concurrent immunoassay
	PCB-12	PA-51	SS17	1.4	0	Composite sample; lateral extent of PCBs defined by Plan 2 borings	Exploratory excavation with concurrent immunoassay
	PCB-13	PA-58	SS08	2.7	0	Lead above PRG associated with PCBs; lateral extent defined but not well constrained	Exploratory excavation with concurrent immunoassay

Table 3. Areas Considered for Removal Action Based on PCB Concentrations
Hunters Point Annex
San Francisco, California

Parcel	PCB Area	Site	Sampling Location	Results (mg/kg)	Depth (ft bgs)	Comments	Recommendations
D	PCB-14	IR-08	multiple locations	1.2 - 7.2	0.75 - 16.25	PCB Spill Area - interim soil removal performed in 1989	Not suitable for exploratory excavation; see OU II Feasibility Study for comparison of soil remedial alternatives
	PCB-15	IR-36	B105	1.1	0.75	Irregular distribution of PCBs in area; petroleum hydrocarbon (diesel and gasoline) plume in groundwater beneath this area	Additional field screening to confirm occurrence above PRG; if indicated, exploratory excavation with concurrent immunoassay
E	PCB-16	IR-01	multiple locations	1.0 - 32,000	0.75 - 27.25	Industrial Landfill; PCBs thoughout soil and sometimes in groundwater; many other contaminants present	Not suitable for exploratory excavation
	PCB-17	IR-12	Disposal trenches only	1.0 - 33	<6	PAHs, arsenic above PRGs; disposal trench not properly constructed	Not appropriate for exploratory excavation; Group 5 ASR recommends interim removal and offsite disposal of soils
	PCB-18	IR-04	along railroad tracks in and south of IR-04	1.4 - 25	<2	Copper, lead also found throughout IR-04 and IR-12 in shallow soil; localized occurrences of PAHs, antimony, cadmium, zinc, mercury, chromium	Not appropriate for exploratory excavation; OU III ASR recommended no interim action as excavation may not be necessary or consistent with ultimate actions such as capping
	PCB-19	IR-02	multiple locations in Bay Fill Area	1 - 490	1.0 - 11.25	Multiple contaminants, including radioactive waste and dioxins	Not suitable for exploratory excavation; complex wastes
	PCB-20	IR-02	B100 TA30B	32 3.9	1.12 6.25	PAHs and lead also exceed PRG; vertical and lateral extent not defined; no other PRG exceedances	Exploratory excavation with prior and concurrent field screening for PCBs and PAHs

Table 3. Areas Considered for Removal Action Based on PCB Concentrations
Hunters Point Annex
San Francisco, California

Parcel	PCB Area	Site	Sampling Location	Results (mg/kg)	Depth (ft bgs)	Comments	Recommendations
E (cont.)	PCB-21	IR-02	B-359	1.6	3.75	Lead also exceeds PRG; petroleum hydrocarbons also present; located within berm around former Tank S-505	Not suitable for exploratory excavation; the area was graded and capped following the Tank S-505 removal action.
				1	8.75		
			B370	1.1	1.25		
	PCB-22	IR-03	multiple locations in Oil Reclam. Ponds	0 - 10	<16.25	Separate-phase hydrocarbons present	Not suitable for exploratory excavation
	PCB-23	IR-05	B049	1.0	1.25	Removal area defined but not well constrained laterally; lead and PAHs also exceed PRGs	Additional field screening to confirm occurrences of PCBs above PRGs; if indicated, exploratory excavation with concurrent field screening for PCBs, PAHs, and lead
			B064	1.0	1.25		
	PCB-24	IR-05	B087	4.8	1.25	Removal area defined but not well constrained; lead also exceeds PRG	Exploratory excavation with prior and concurrent field screening for PCBs and lead
				0.3	6.25		
	PCB-25	IR-11	SS21	3.3	0.5	West side of Building 521 power plant	Removal of 50 cu. yd. recommended in Group 5 ASR
			SS23	38	0.5		
			SS23	30	1.5		
	PCB-26	IR-13	B003B	1.8	1.75	Removal area defined but not well constrained; lead also exceeds PRG	Exploratory excavation with prior and concurrent field screening for PCBs and lead
	PCB-27	IR-13	B007	7.5	2.25	Lateral extent not well defined	Exploratory excavation with prior and concurrent immunoassay

Table 3. Areas Considered for Removal Action Based on PCB Concentrations
Hunters Point Annex
San Francisco, California

Parcel	PCB Area	Site	Sampling Location	Results (mg/kg)	Depth (ft bgs)	Comments	Recommendations
E (cont.)	PCB-28	IR-14	B009	1.6	1.75	Lateral extent not well defined	Exploratory excavation with prior and concurrent immunoassay
			SS02	1.5	0		
			SS05	6.2	0		
			SS09	1.1	0		

Note: Locations with PCB concentrations > 1 mg/kg are included in this table. See Tables 2a through 2d for concentrations < 1 mg/kg.
mg/kg milligrams per kilogram
ft. bgs feet below ground surface

Table 4. Soil Volume Estimates for Exploratory Excavation of PCB-Contaminated Soil
Hunters Point Annex
San Francisco, California

Parcel	Exploratory Excavation Area	Area (ft. x ft.)	Depth (ft.)	Estimated Soil Volume to be Removed (cu. yd.)	Range of Soil PCB Concentrations (mg/kg)	Comment
B	PCB-4	100 x 20	3	220	1 - 26	Apparently associated with fuel line; estimate includes soil between the sample locations; does not include fuel line removal
	PCB-5	6 x 6	3	4	1 - 3.8	Isolated detection; lateral extent not well defined
	PCB-6	3(6 x 6)	3	10	1 - 1.5	Isolated detection (composite), lateral extent defined by Plan 2 borings and stains
	PCB-7	10 x 200	3	220	1 - 1.9	Soil excavation in conjunction with fuel line removal
	PCB-8	6 x 6	3	4	1 - 15	Isolated detection (composite); lateral extent defined by Plan 2 borings and stains
	Total for Parcel B			**458**		

Table 4. Soil Volume Estimates for Exploratory Excavation of PCB-Contaminated Soil
Hunters Point Annex
San Francisco, California

Parcel	Exploratory Excavation Area	Area (ft. x ft.)	Depth (ft.)	Estimated Soil Volume to be Removed (cu. yd.)	Range of Soil PCB Concentrations (mg/kg)	Comment
C	PCB-9	40 x 40	6	350	1 - 39	Kiln room with staining on floor; PCBs also detected outside bldg.
	PCB-10	15 x 30	3	50	1 - 140	Cluster of detections at surface stains
	PCB-11	6 x 6	3	4	1 - 1.2	Isolated detection; lateral extent defined
	PCB-12	6 x 6	3	4	1 - 1.4	Isolated detection; lateral extent defined (composite)
	PCB-13	6 x 6	3	4	1 - 2.7	Isolated detection at stain
	Total for Parcel C			**412**		
D	PCB-15	6 x 6	3	4	1 - 1.1	Recommend additional screening; removal may not be necessary because of low concentration
	Total for Parcel D			**4**		

Table 4. Soil Volume Estimates for Exploratory Excavation of PCB-Contaminated Soil
Hunters Point Annex
San Francisco, California

Parcel	Exploratory Excavation Area	Area (ft. x ft.)	Depth (ft.)	Estimated Soil Volume to be Removed (cu. yd.)	Range of Soil PCB Concentrations (mg/kg)	Comment
E	PCB-20	80 x 10	3	90	1 - 32	Isolated detection; extent not well defined
	PCB-23	6 x 6	3	4	1	Recommend additional screening; removal may not be necessary because of low concentration
	PCB-24	6 x 6	3	4	1 - 4.8	Isolated detection; lateral extent not well defined
	PCB-26	6 x 6	3	4	1 - 1.8	Isolated detection; lateral extent not well defined
	PCB-27	6 x 6	3	4	1 - 7.5	Isolated detection; lateral extent not well defined
	PCB-28	110 x 20 2 (6 x 6)	3 3	240 8	1 - 1.6 1 - 6.2	Assumed to be shallow only; 110 x 20-ft area extends from IR14MW09A to IR14SS09; 6 x 6-ft. areas center on IR14SS02 and IR14SS05.
	Total for Parcel E			**354**		
	Overall Total, Parcels B, C, D, and E			**1228**		

Table 4. Soil Volume Estimates for Exploratory Excavation of PCB-Contaminated Soil
Hunters Point Annex
San Francisco, California

Parcel	Exploratory Excavation Area	Area (ft. x ft.)	Depth (ft.)	Estimated Soil Volume to be Removed (cu. yd.)	Range of Soil PCB Concentrations (mg/kg)	Comment

Assumptions

Soil volume estimates are based on available data and subject to the following assumptions:

- For single, isolated detections with or without non-detects nearby (within 100 ft.), assume limited excavation using a 6-ft.-wide excavator bucket to the depth indicated. For shallow depths (0 to 3 ft.) assume 6 ft. by 6 ft. cut. For greater depths, assume 6 ft. wide by greater than 6-ft. length cut, depending on target depth.
- Excavation depth of 3 ft. for shallow soil PRG exceedances in top 0 to 3 ft., with or without vertical control. Excavation depth of 6 ft. for soil PRG exceedances between 3 and 6 ft.
- For areas with limited nearby sample data, lateral extent of excavation is 10 ft to either side of sample location.
- For areas with non-detectable concentrations nearby, lateral extent of excavation is 5 ft. to either side of sample location.

Table 5. PCB Concentrations in Groundwater, Stormwater, and Sanitary Sewer Samples
Hunters Point Annex
San Francisco, California

								Comparison to EPA Water Quality Standards for PCBs			
Parcel	Station	Matrix	Sample Number	PCB Compound	Value (ug/l)	Detection Limit (ug/l)	Qual.[1]	NAWQC 0.03 ug/l	PRG 0.0087 ug/l	PRG for Aroclor 1254 0.73 ug/l	MCL 0.5 ug/l
B	IR25MW15A1	H2O	9424X375	Aroclor 1260	2	1.06	J3	*	*	NA	*
	IR25MW15A2	H2O	9423E011	Aroclor 1260	5	1	VJ3	*	*	NA	*
	IR25MW15A2	H2O	9423E012	Aroclor 1260	3	1	A	*	*	NA	*
	IR25MW15A2	H2O	9432E118	Aroclor 1260	11	1	J3	*	*	NA	*
	IR25MW15A2	H2O	9521X629	Aroclor-1260	4	1	J3	*	*	NA	*
	IR25MW15A2	H2O	9521X630	Aroclor-1260	9	1	J3	*	*	NA	*
	IR25MW16A	H2O	9522X645	Aroclor-1260	0.6	1	V	*	*	NA	*
	IR25MW16A	H2O	9522X646	Aroclor-1260	1	1	A	*	*	NA	*
	SW1RO[2]	OH2O	90501R00	Aroclor 1260	3	0	A	*	NA	NA	NA
	SW1SD[2]	OH2O	9046E133	Aroclor 1260	4	0	A	*	NA	NA	NA
	SW1SD[2]	OH2O	90501S00	Aroclor 1260	3	0	A	*	NA	NA	NA
	SW1SD[2]	OH2O	90501S01	Aroclor 1260	5	0	A	*	NA	NA	NA
	SW1SD[2]	OH2O	90501S07	Aroclor 1260	4	0	A	*	NA	NA	NA
	SW1SD[2]	OH2O	90501S08	Aroclor 1260	2	0	A	*	NA	NA	NA
C	IR28MW129A	H2O	9526X745	Aroclor-1260	23	10	A	*	*	NA	*
	IR28MW171A	H2O	9422X364	Aroclor 1260	3	1	VJ3	*	*	NA	*
	IR28MW171A	H2O	9523A068	Aroclor 1260	0.9	1	V	*	*	NA	*
	IR28MW171A	H2O	9523A069	Aroclor 1260	0.8	1	A	*	*	NA	*
	IR29MW48A	H2O	9423E004	Aroclor 1248	2	1.01	J3	*	*	NA	*
	IR50MW13F	H2O	9436X458	Aroclor 1260	1	1	J3	*	*	NA	*
	IR58MW31A	H2O	9525X721	Aroclor 1260	3	1	A	*	*	NA	*
	PA50SN337†	OH2O	9410X260	Aroclor 1260	1	1.04	A	NA	NA	NA	NA
	PA50SN339†	OH2O	9410X256	Aroclor 1260	0.7	1.02	J3	NA	NA	NA	NA

Table 5. PCB Concentrations in Groundwater, Stormwater, and Sanitary Sewer Samples
Hunters Point Annex
San Francisco, California

								Comparison to EPA Water Quality Standards for PCBs			
Parcel	Station	Matrix	Sample Number	PCB Compound	Value (ug/l)	Detection Limit (ug/l)	Qual.[1]	NAWQC 0.03 ug/l	PRG 0.0087 ug/l	PRG for Aroclor 1254 0.73 ug/l	MCL 0.5 ug/l
D	IR39B016	HH2O	9420A846	Aroclor 1260	2	1.15	J3	*	*	NA	*
	IR39MW21A	H2O	9425E029	Aroclor 1260	0.6	1	VJ35	*	*	NA	*
	IR08MW42A	H2O	9141X203	Aroclor 1260	4	5	VA	*	*	NA	*
	IR08MW42A	H2O	9141X204	Aroclor 1260	2	5	A	*	*	NA	*
	IR08MW42A	H2O	9151X362	Aroclor 1260	1	1	A	*	*	NA	*
	SW2SD[2]	H2O	90502S02	Aroclor 1260	2	0	A	*	*	NA	*
E	IR01B021	GH2O	9219H139	Aroclor 1242	250	55	A	*	*	NA	*
	IR01B021	GH2O	9219H139	Aroclor 1254	630	110	A	*	NA	*	*
	IR01B021	GH2O	9219H139	Aroclor 1260	90	110	A	*	*	NA	*
	IR01B275	GH2O	9226A377	Aroclor 1260	6	1	A	*	*	NA	*
	IR01MW03A	H2O	9234X682	Aroclor 1254	2	1	A	*	NA	*	*
	IR01MW03A	H2O	9234X682	Aroclor 1260	1	1	A	*	*	NA	*
	IR01MW03A	H2O	9234X683	Aroclor 1254	2	1	A	*	NA	*	*
	IR01MW03A	H2O	9234X683	Aroclor 1260	1	1	A	*	*	NA	*
	IR01MW05A	H2O	9218Z050	Aroclor 1260	2	1	J3	*	*	NA	*
	IR01MW05A	H2O	9218Z051	Aroclor 1260	3	1	J3	*	*	NA	*
	IR01MW05A	H2O	9230J191	Aroclor 1242	38	10	A	*	*	NA	*
	IR01MW05A	H2O	9230J191	Aroclor 1260	36	20	A	*	*	NA	*
	IR01MW05A	H2O	9234J200	Aroclor 1242	10	5	V	*	*	NA	*
	IR01MW05A	H2O	9234J200	Aroclor 1260	7	10	V	*	*	NA	*
	IR01MW16A	H2O	9230J184	Aroclor 1242	28	12	A	*	*	NA	*
	IR01MW16A	H2O	9230J185	Aroclor 1242	52	12	A	*	*	NA	*
	IR01MW16A	H2O	9234J202	Aroclor 1242	30	5	A	*	*	NA	*

Table 5. PCB Concentrations in Groundwater, Stormwater, and Sanitary Sewer Samples
Hunters Point Annex
San Francisco, California

Parcel	Station	Matrix	Sample Number	PCB Compound	Value (ug/l)	Detection Limit (ug/l)	Qual.[1]	Comparison to EPA Water Quality Standards for PCBs: NAWQC 0.03 ug/l	PRG 0.0087 ug/l	PRG for Aroclor 1254 0.73 ug/l	MCL 0.5 ug/l
E	IR01MW18A	H2O	9230J189	Aroclor 1242	9	2.5	A	*	*	NA	*
	IR01MW18A	H2O	9230J189	Aroclor 1254	8	5	A	*	NA	*	*
	IR01MW31A	H2O	9218Z063	Aroclor 1242	2	0.5	A	*	*	NA	*
	IR01MW31A	H2O	9218Z063	Aroclor 1260	0.8	1	A	*	*	NA	*
	IR01MW31A	H2O	9218Z064	Aroclor 1242	5	2.5	A	*	*	NA	*
	IR01MW31A	H2O	9218Z064	Aroclor 1260	2	5	A	*	*	NA	*
	IR01MW42A	H2O	9202A021	Aroclor 1254	1	1	A	*	NA	*	*
	IR01MW43A	H2O	9112X068	Aroclor 1260	37	10	A	*	*	NA	*
	IR01MW43A	H2O	9234X685	Aroclor 1260	32	50	J3	*	*	NA	*
	IR01MW44A	H2O	9113X072	Aroclor 1260	20	10	J3	*	*	NA	*
	IR01MW44A	H2O	9113X073	Aroclor 1260	34	10	A	*	*	NA	*
	IR01MW44A	H2O	9204X430	Aroclor 1260	13	10	A	*	*	NA	*
	IR01MW44A	H2O	9204X430A[3]	Aroclor 1260	7	5	A	*	*	NA	*
	IR01MW44A	H2O	9234X700	Aroclor 1260	19	20	A	*	*	NA	*
	IR01MW58A	H2O	9234J213	Aroclor 1260	0.5	1	A	*	*	NA	*
	IR01MWI-3	H2O	9203X418	Aroclor 1260	11	10	A	*	*	NA	*
	IR01MWI-3	H2O	9203X418A[3]	Aroclor 1260	3	1	A	*	*	NA	*
	IR01MWI-3	H2O	9228A395	Aroclor 1260	54	25	A	*	*	NA	*
	IR01MWI-3	H2O	9228A396	Aroclor 1260	6	5	A	*	*	NA	*
	IR01MWI-3	H2O	9235X709	Aroclor 1260	11	10	A	*	*	NA	*
	IR01MWI-5	H2O	9228J163	Aroclor 1260	10	10	A	*	*	NA	*
	IR01MWI-5	H2O	9234X704	Aroclor 1242	17	5	A	*	*	NA	*
	IR01MWI-5	H2O	9234X704	Aroclor 1260	16	10	A	*	*	NA	*
	IR01MWI-6	H2O	9234X705	Aroclor 1260	0.3	1	A	*	*	NA	*

Table 5. PCB Concentrations in Groundwater, Stormwater, and Sanitary Sewer Samples
Hunters Point Annex
San Francisco, *California*

								Comparison to EPA Water Quality Standards for PCBs			
Parcel	Station	Matrix	Sample Number	PCB Compound	Value (ug/l)	Detection Limit (ug/l)	Qual.[1]	NAWQC 0.03 ug/l	PRG 0.0087 ug/l	PRG for Aroclor 1254 0.73 ug/l	MCL 0.5 ug/l
E	IR01MWI-9	H2O	928A394	Aroclor 1260	3	1	A	*	*	NA	*
	IR01MWI-9	H2O	9234J217	Aroclor 1242	9	5	A	*	*	NA	*
	IR01MWI-9	H2O	9234J217	Aroclor 1260	5	10	A	*	*	NA	*
	IR02MW126A	H2O	9202A002	Aroclor 1260	3	1	A	*	*	NA	*
	IR02MW126A	H2O	9228J157	Aroclor 1260	4	5	A	*	*	NA	*
	IR02MW126A	H2O	9228J158	Aroclor 1260	4	5	A	*	*	NA	*
	IR02MW126A	H2O	9235X717	Aroclor 1260	3	5	J7	*	*	NA	*
	IR02MW141A	H2O	9218Z059	Aroclor 1254	3	5	A	*	NA	*	*
	IR02MW141A	H2O	9218Z059	Aroclor 1260	2	5	A	*	*	NA	*
	IR02MW141A	H2O	9218Z060	Aroclor 1242	2	0.5	A	*	*	NA	*
	IR02MW141A	H2O	9218Z060	Aroclor 1260	0.9	1	A	*	*	NA	*
	IR02MW141A	H2O	9230J177	Aroclor 1260	0.7	1	A	*	*	NA	*
	IR02MW141A	H2O	9230J178	Aroclor 1260	0.7	1	A	*	*	NA	*
	IR02MW141A	H2O	9235X715	Aroclor 1260	5	1	J3	*	*	NA	*
	IR02MW141A	H2O	9235X716	Aroclor 1260	3	1	J3	*	*	NA	*
	IR02MW146A	H2O	9205X479	Aroclor 1260	9	5	A	*	*	NA	*
	IR02MWB-3	H2O	9204X432	Aroclor 1254	18	10	A	*	NA	*	*
	IR02MWB-3	H2O	9204X432A[3]	Aroclor 1254	10	10	A	*	NA	*	*
	IR02MWB-3	H2O	9228X671	Aroclor 1254	40	20	A	*	NA	*	*
	IR02MWB-3	H2O	9235J241	Aroclor 1254	23	5	A	*	NA	*	*
	IR02MWB-3	H2O	9235J242	Aroclor 1254	19	5	A	*	NA	*	*
	IR02MWB-5	H2O	9235J245	Aroclor 1260	0.8	1	A	*	*	NA	*
	IR03B338	H2O	9226N037	Aroclor 1260	2	1	A	*	*	NA	*
	IR03MW218A1	H2O	9228X666	Aroclor 1260	32	50	A	*	*	NA	*

Table 5. PCB Concentrations in Groundwater, Stormwater, and Sanitary Sewer Samples
Hunters Point Annex
San Francisco, California

								Comparison to EPA Water Quality Standards for PCBs			
Parcel	Station	Matrix	Sample Number	PCB Compound	Value (ug/l)	Detection Limit (ug/l)	Qual.[1]	NAWQC 0.03 ug/l	PRG 0.0087 ug/l	PRG for Aroclor 1254 0.73 ug/l	MCL 0.5 ug/l
E	IR03MW224A	H2O	9230J196	Aroclor 1260	0.5	1	A	*	*	NA	*
	IR03MW224A	H2O	9235X734	Aroclor 1260	0.7	1	J7	*	*	NA	*
	IR03MW224A	H2O	9235X735	Aroclor 1260	0.7	1	J7	*	*	NA	*
	IR03MW225A	H2O	9205X470	Aroclor 1260	3	2	A	*	*	NA	*
	IR03MW225A	H2O	9205X471	Aroclor 1260	4	5	A	*	*	NA	*
	IR03MW226A	H2O	9230J197	Aroclor 1260	9	10	A	*	*	NA	*
	IR03MW226A	H2O	9230J198	Aroclor 1260	12	20	A	*	*	NA	*
	IR03MW226A	H2O	9235X732	Aroclor 1260	9	5	A	*	*	NA	*
	IR03MWO-1	H2O	9204X452	Aroclor 1260	33	50	A	*	*	NA	*
	IR03MWO-1	H2O	9204X453	Aroclor 1260	48	10	A	*	*	NA	*
	IR03MWO-1	H2O	9228X667	Aroclor 1260	290	200	A	*	*	NA	*
	IR05MW73A	H2O	9225X644	Aroclor 1260	0.8	1	VA	*	*	NA	*

H2O Groundwater sample collected from well
GH2O Grab groundwater sample collected from borings with a bailer
HH2O HydroPunch groundwater sample
OH2O Water sample collected from stormwater or sanitary sewer
NA Not applicable to surface water runoff
NAWQC National Ambient Water Quality Criteria; most stringent of the Saltwater Aquatic Life Protection recommended criteria (EPA, 1986)
PRG U.S. EPA Cancer Preliminary Remediation Goal for Tap Water (EPA, 1995)
MCL U.S. EPA Maximum Contaminant Level Drinking Water Standard; equal to California MCL (EPA, 1995)
* Analytical results exceed specified water quality standard

Table 5. PCB Concentrations in Groundwater, Stormwater, and Sanitary Sewer Samples
Hunters Point Annex
San Francisco, California

								Comparison to EPA Water Quality Standards for PCBs			
Parcel	Station	Matrix	Sample Number	PCB Compound	Value (ug/l)	Detection Limit (ug/l)	Qual.[1]	NAWQC 0.03 ug/l	PRG 0.0087 ug/l	PRG for Aroclor 1254 0.73 ug/l	MCL 0.5 ug/l

[1] Validation Assigned Qualifiers
- A: Based on cursory validation, analytical results for this compound are acceptable without qualification.
- J3: Analytical results for this compound are qualified as estimated due to noncompliance with spike recovery criteria.
- J5: Analytical results for this compound are qualified as estimated due to noncompliance with holding time criteria.
- J7: Analytical results for this compound are qualified as estimated due to noncompliance with initial calibration and/or continuing calibration criteria.
- J35: Analytical results for this compound are qualified as estimated due to noncompliance with spike recovery and holding time criteria.
- V: Analytical result received a full CLP validation.

[2] "RO" suffix indicates runoff water sample and "SD" indicates storm drain sample collected during stormwater sampling event; "SN" indicates sanitary sewer sample. Only NAWQC applies to these surface water samples. Stormwater and sanitary sewer samples are not shown on Plate 5.

[3] Groundwater filtered prior to PCB analysis; duplicate nonfiltered sample has the same sample number without the suffix "A".

EXPLANATION - PCBs DETECTED IN SOIL

IR-51 SOIL SAMPLES

- PCBs LESS THAN 1 mg/kg
- PCBs GREATER THAN 1 mg/kg

OTHER IR AND SI SITES SOIL SAMPLES

- PCBs LESS THAN 1 mg/kg
- PCBs GREATER THAN 1 mg/kg

EXPLANATION:

RI AND SI SAMPLING LOCATIONS

- SOIL BORING
- SOIL BORING/HYDROPUNCH
- A-AQUIFER MONITORING WELL
- BEDROCK MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT; SYMBOL DOES NOT REPRESENT TRUE LENGTH OF TEST PIT
- EXPLORATORY EXCAVATION PROPOSED IN SITE INSPECTION REPORT
- UNDERGROUND STORAGE TANK (UST) IN HPA TANK PROGRAM
- EXISTING IR SITE
- BUILDING OR AREA IDENTIFIED FOR INVESTIGATION WITHIN A PA SITE
- 159 EXISTING BUILDING
- 155 LOCATION OF FORMER BUILDING
- IR SITE BOUNDARY
- PA SITE BOUNDARY
- PARCEL BOUNDARY
- CRANE OR RAILROAD TRACKS
- FENCE
- ROADWAY
- 1935 SHORELINE
- FORMER DOCK
- PCB-6 PCB AREA WITH PCB SOIL CONCENTRATIONS >1 mg/kg, SEE TABLE 3 FOR DESCRIPTION

100 0 100 200
SCALE IN FEET

FACILITY BOUNDARY

INDIA BASIN

SAN FRANCISCO BAY

IR-7 IR-18 IR-23 IR-10 IR-42 IR-6 IR-24 IR-26 IR-20 IR-25 IR-27 IR-58 IR-28 PA-31

PCB-29 PCB-4 PCB-8 PCB-7 PCB-5 PCB-2 PCB-1 PCB-6

BERTH 63 BERTH 62 BERTH 64 BERTH 61 BERTH 56 BERTH 57 BERTH 55

A B C

NO.	DATE	REVISIONS	BY	CHK

DRAWN: JCE	PROJECT NO: 11400 090502
ENGINEER:	SCALE: 1"=100'
CHECKED:	APPROVED: SKH
DATE:	DATE: 5/31/96

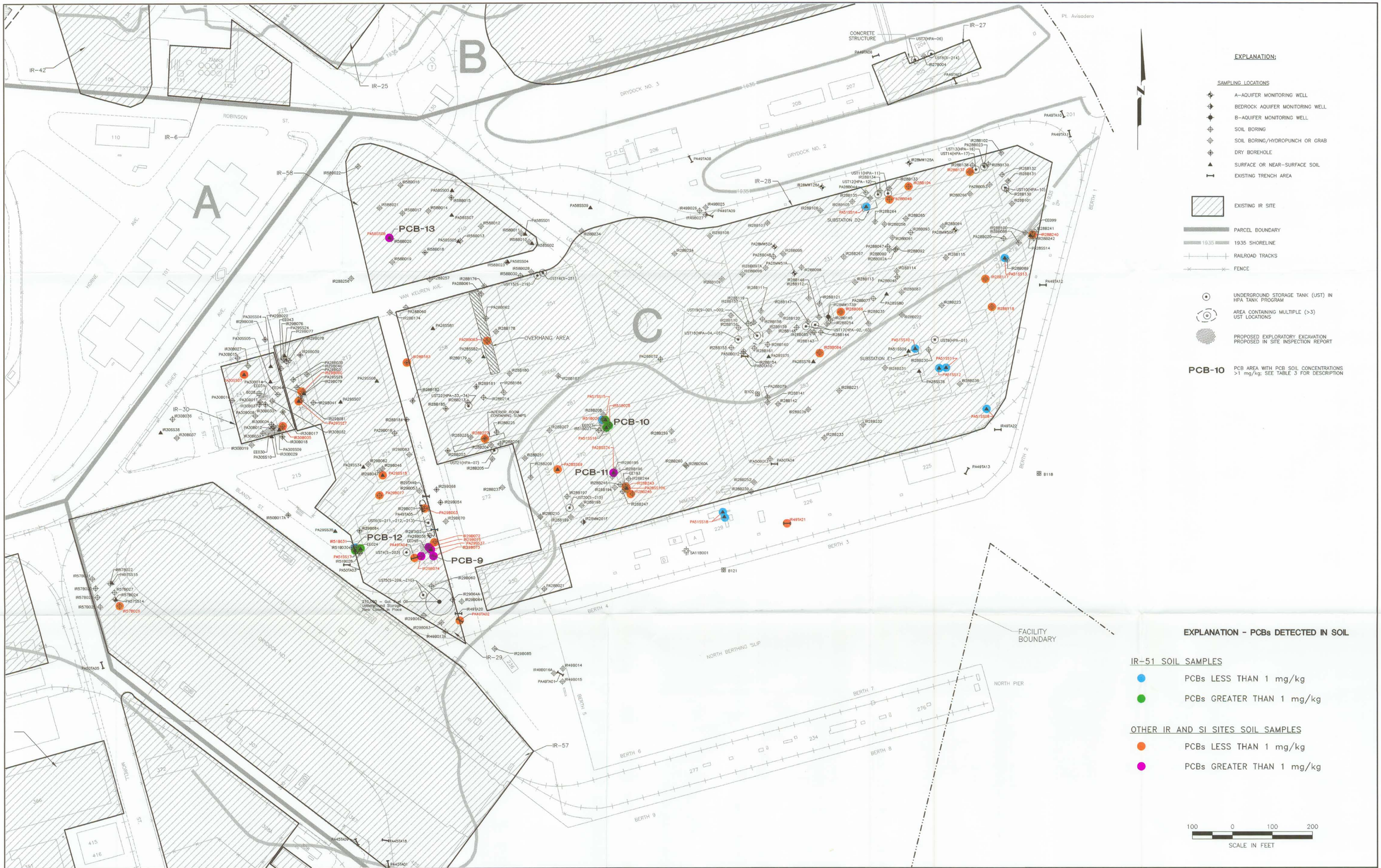
Harding Lawson Associates
Engineering and Environmental Services

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY WEST
San Bruno, California

Parcel B Remedial Investigation
Hunters Point Annex
San Francisco, California

SAMPLING LOCATIONS FOR PCBs DETECTED IN SOIL PARCEL B

PLATE 1
SHEET: OF
REVISION NUMBER:
DATE: 5/31/96



EXPLANATION:

SAMPLING LOCATIONS

- A-AQUIFER MONITORING WELL
- BEDROCK AQUIFER MONITORING WELL
- B-AQUIFER MONITORING WELL
- SOIL BORING
- SOIL BORING/HYDROPUNCH OR GRAB
- DRY BOREHOLE
- SURFACE OR NEAR-SURFACE SOIL
- EXISTING TRENCH AREA

EXISTING IR SITE

PARCEL BOUNDARY

1935 SHORELINE

RAILROAD TRACKS

FENCE

UNDERGROUND STORAGE TANK (UST) IN HPA TANK PROGRAM

AREA CONTAINING MULTIPLE (>3) UST LOCATIONS

PROPOSED EXPLORATORY EXCAVATION PROPOSED IN SITE INSPECTION REPORT

PCB-10 PCB AREA WITH PCB SOIL CONCENTRATIONS >1 mg/kg; SEE TABLE 3 FOR DESCRIPTION

EXPLANATION - PCBs DETECTED IN SOIL

IR-51 SOIL SAMPLES

- PCBs LESS THAN 1 mg/kg
- PCBs GREATER THAN 1 mg/kg

OTHER IR AND SI SITES SOIL SAMPLES

- PCBs LESS THAN 1 mg/kg
- PCBs GREATER THAN 1 mg/kg

100 0 100 200
SCALE IN FEET

NO.	DATE	REVISIONS	BY	CHK

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ENGINEER: | SCALE: 1"=100'
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DATE: | DATE: 5/31/96

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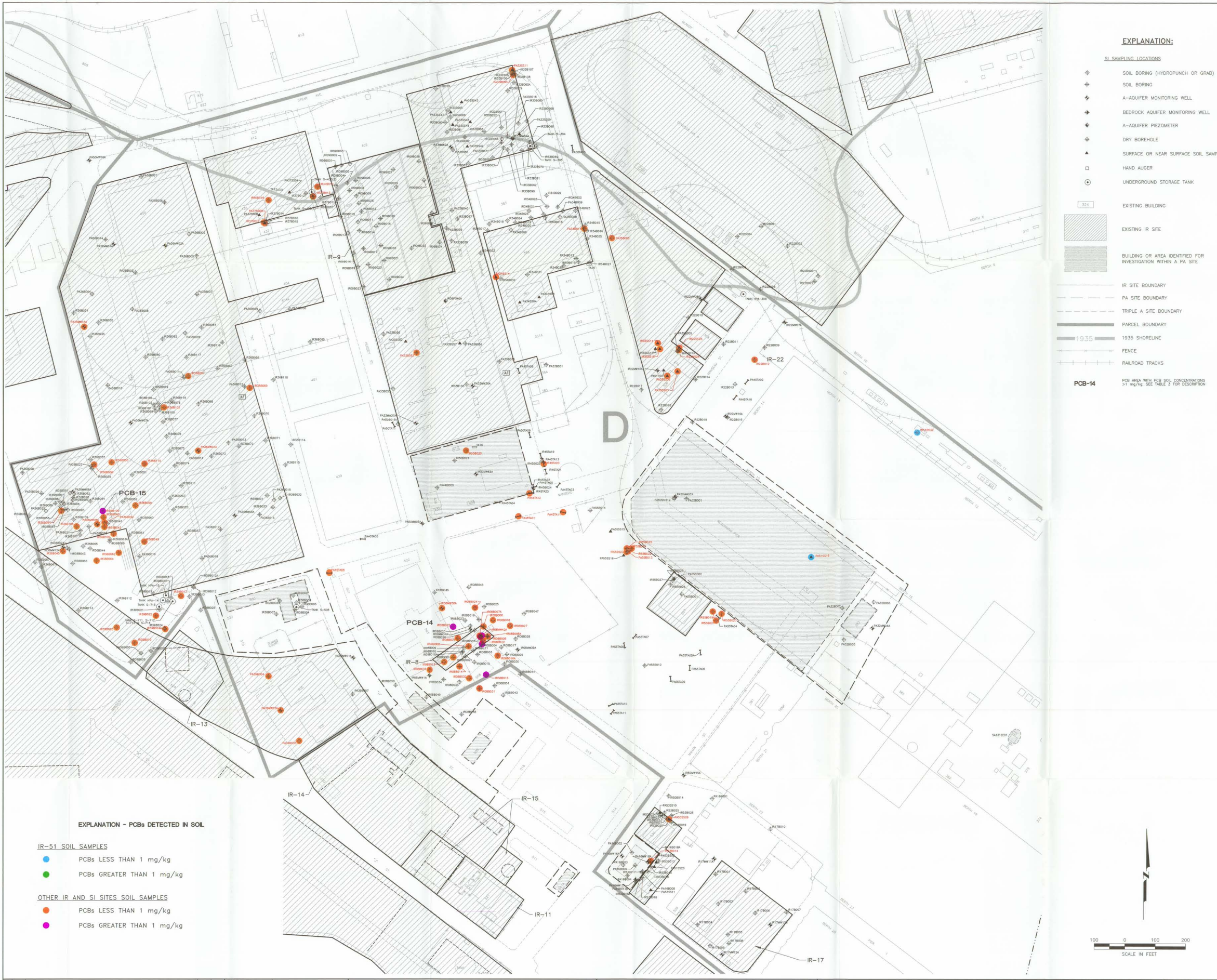
San Francisco, California

SAMPLING LOCATIONS FOR PCBs DETECTED IN SOIL PARCEL C

PLATE 2
SHEET: OF
REVISION NUMBER:
DATE: 5/31/96



NO.	DATE	REVISIONS	BY	CHK

DESIGNED:	PROJECT NO: 11400.090504
DRAWN: JCE	SCALE: 1" = 100'
CHECKED:	APPROVED: SHP
DATE:	DATE: 5/31/96

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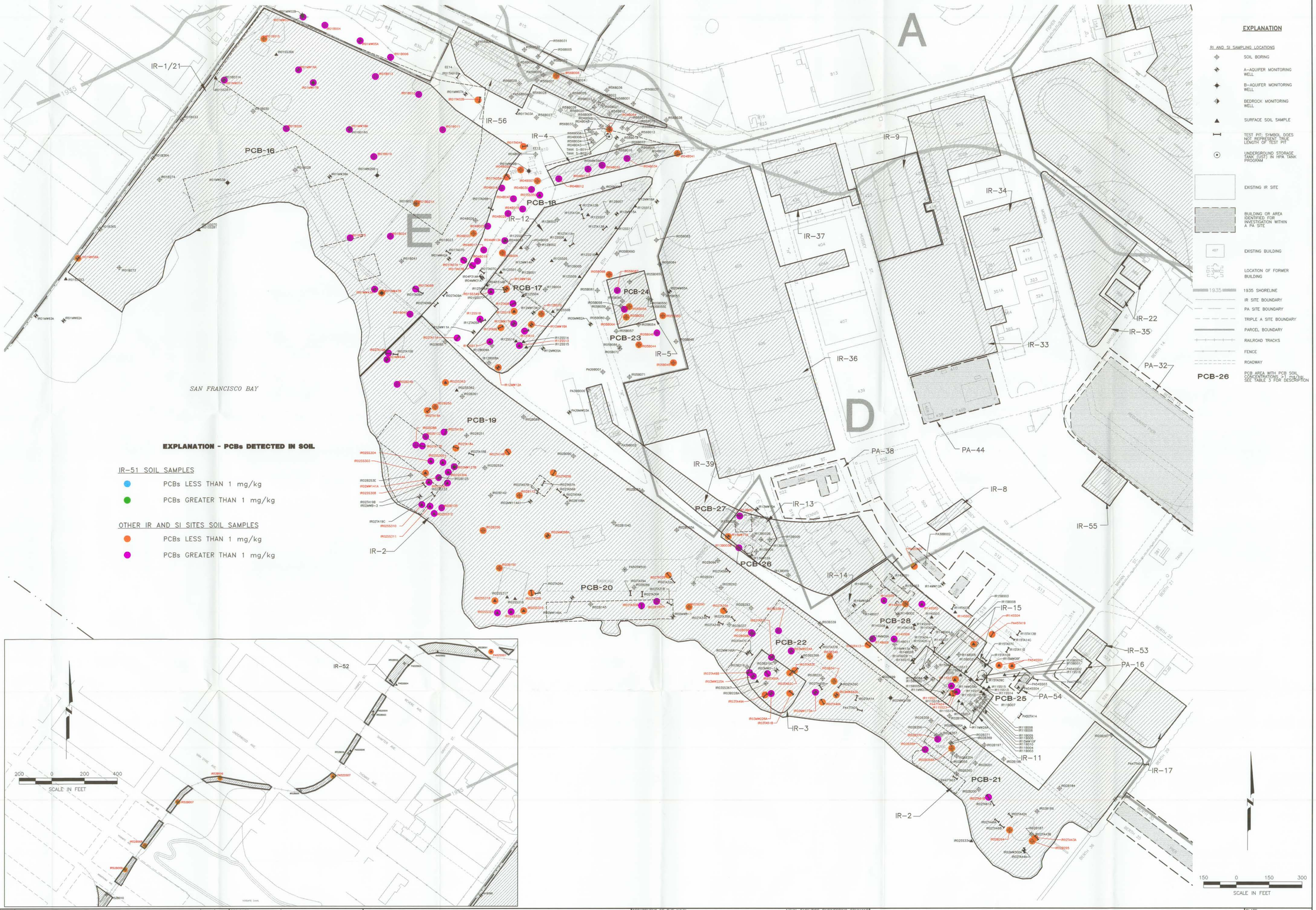
Engineering Field Activity West
Parcel D Remedial Investigation
Hunters Point Annex
San Francisco, California

SAMPLING LOCATIONS FOR PCBs DETECTED IN SOIL PARCEL D

PLATE: 3
SHEET: OF
REVISION NUMBER:
DATE: 5/31/96



EXPLANATION - PCBs DETECTED IN SOIL

IR-51 SOIL SAMPLES

- PCBs LESS THAN 1 mg/kg
- PCBs GREATER THAN 1 mg/kg

OTHER IR AND SI SITES SOIL SAMPLES

- PCBs LESS THAN 1 mg/kg
- PCBs GREATER THAN 1 mg/kg

EXPLANATION

RI AND SI SAMPLING LOCATIONS

- SOIL BORING
- A-AQUIFER MONITORING WELL
- B-AQUIFER MONITORING WELL
- BEDROCK MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT; SYMBOL DOES NOT REPRESENT TRUE LENGTH OF TEST PIT
- UNDERGROUND STORAGE TANK (UST) IN HPA TANK PROGRAM
- EXISTING IR SITE
- BUILDING OR AREA IDENTIFIED FOR INVESTIGATION WITHIN A PA SITE
- EXISTING BUILDING
- LOCATION OF FORMER BUILDING
- 1935 SHORELINE
- IR SITE BOUNDARY
- PA SITE BOUNDARY
- TRIPLE A SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS
- FENCE
- ROADWAY
- PCB-26 PCB AREA WITH PCB SOIL CONCENTRATIONS >1 mg/kg; SEE TABLE 3 FOR DESCRIPTION

NO.	DATE	REVISIONS	BY	CHK
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DESIGNED: | DRAWN: JCE | CHECKED: | DATE:
PROJECT NO: 11400 090505 | SCALE: AS NOTED | APPROVED: SLP | DATE: 5/31/96

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San Francisco, California

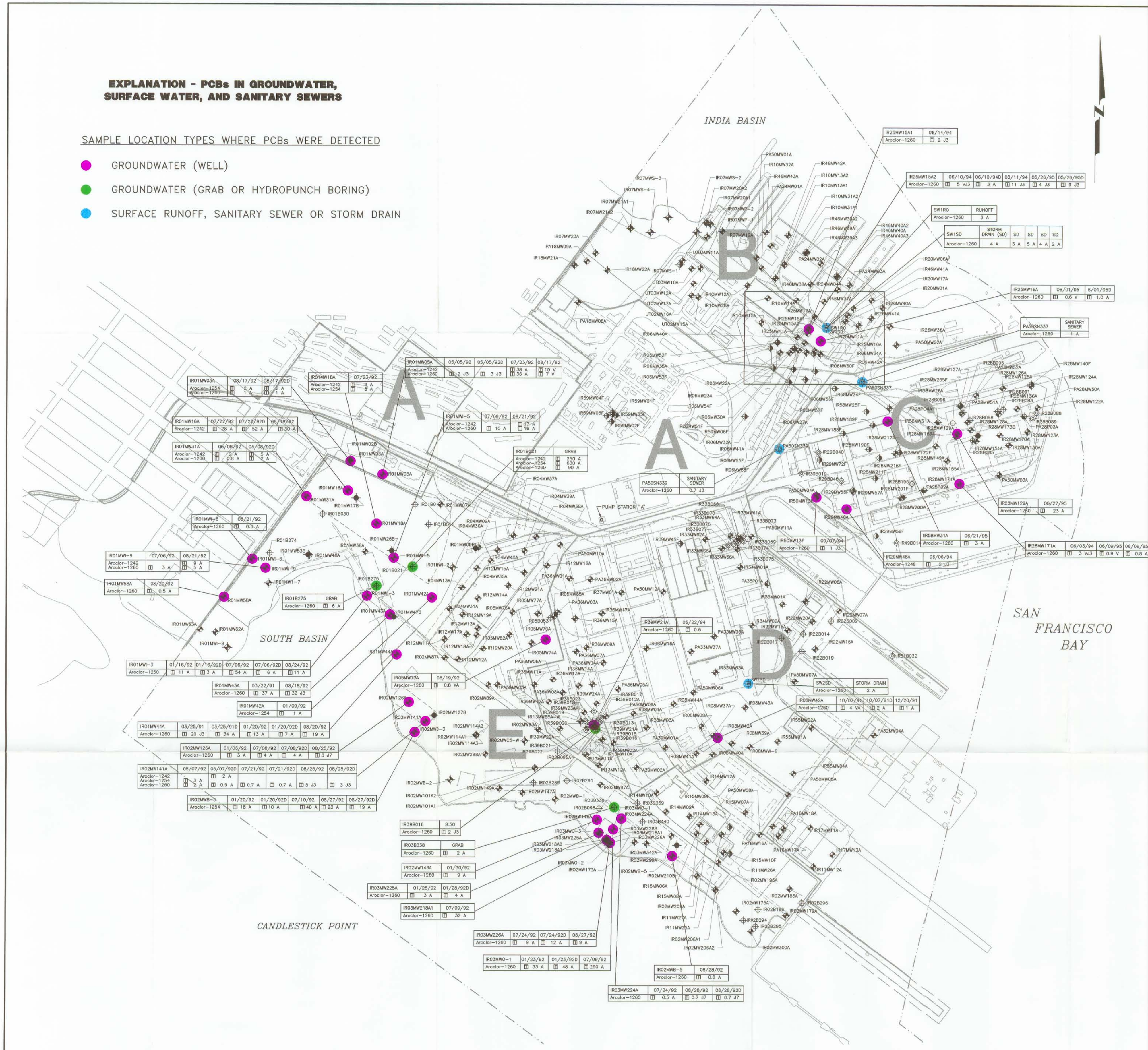
SAMPLING LOCATIONS FOR PCBs DETECTED IN SOIL PARCEL E

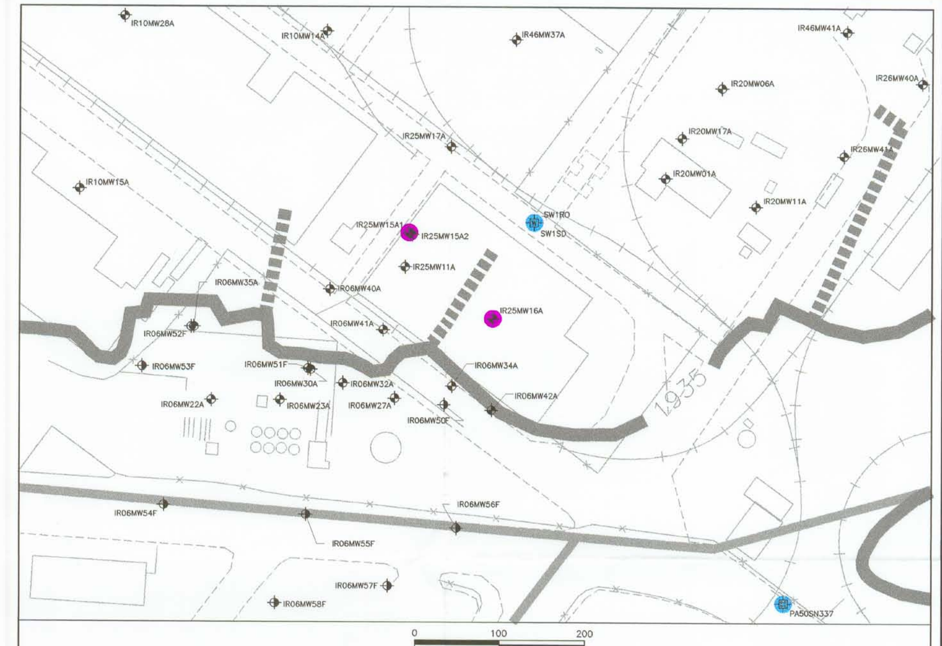
PLATE 4
SHEET: OF
REVISION NUMBER:
DATE: 5/31/96

EXPLANATION - PCBs IN GROUNDWATER, SURFACE WATER, AND SANITARY SEWERS

SAMPLE LOCATION TYPES WHERE PCBs WERE DETECTED

- (magenta) GROUNDWATER (WELL)
- (green) GROUNDWATER (GRAB OR HYDROPUNCH BORING)
- (blue) SURFACE RUNOFF, SANITARY SEWER OR STORM DRAIN





DETAILED VIEW OF IR-6 AREA

EXPLANATION:

RI AND SI GROUNDWATER SAMPLING LOCATIONS

- A-AQUIFER MONITORING WELL
- B-AQUIFER MONITORING WELL
- BEDROCK MONITORING WELL
- PIEZOMETER
- HYDROPUNCH/BORING
- SANITARY SEWER
- STORM DRAIN

PRE-RI MONITORING WELLS

- A-AQUIFER MONITORING WELL
- BEDROCK MONITORING WELL

IR25MW129A	GROUNDWATER
Aroclor-1260	23 A

- SAMPLE LOCATION
- DATE OF WELL SAMPLE (D=DUPLICATE), HYDROPUNCH SAMPLE DEPTH, OR OTHER MATRIX TYPE
- PROJECT QUALIFIERS
- concentrations in micrograms per liter (µg/l)
- EXCEEDS CANCER PRG FOR TAPWATER (0.0087 µg/l)
- PCB COMPOUND

APPROXIMATE ZONE OF TIDAL INFLUENCE

- 1935 SHORELINE
- PREVIOUS DOCK LOCATION
- EXISTING BUILDING
- LOCATION OF FORMER BUILDING
- PARCEL BOUNDARY
- FENCE
- RAILROAD TRACK

400 0 400 800
SCALE IN FEET

NO.	DATE	REVISIONS	BY	CHK

DRAWN: CN
ENGINEER:
CHECKED:
DATE:

PROJECT NO: 11400 090502-5
SCALE: 1"=400'
APPROVED: SKP
DATE: 5/31/96

Harding Lawson Associates
Engineering and Environmental Services

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY WEST
San Bruno, California

Engineering Field Activity West
Hunters Point Annex
San Francisco, California

PCBs IN GROUNDWATER, SURFACE WATER, AND SANITARY SEWERS HUNTERS POINT ANNEX

PLATE 5
SHEET: OF
REVISION NUMBER:
DATE: 5/31/96

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